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CALIFORNIA
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WESTERN MEDICINE

VOL. XXIII OCTOBER, 1925 No. 10

SPECIAL ARTICLE

REMARKS ON THE PRACTICAL TREATMENT OF DIABETES

By FREDERICK M. ALLEN, M. D., *Morriston, New Jersey*
(Delivered before the San Diego Medical Society, November 18, 1924)

DOCTOR ALLEN'S method of handling the subject of diabetes, by refuting many of the erroneous views that creep into the discussion of any new subject is particularly pertinent. Following promptly in the wake of any scientific discovery is a stimulated crop of all kinds of pseudo-scientific views bearing more or less closely upon the subject; and even we physicians are not above espousing them for a time. A direct negation, given by an authority we recognize, to the more plausible of these errors clears our vision and strengthens our practice wonderfully.—EDITOR.

I SHALL speak informally on the subject of the practical treatment of diabetes.

Many advances have been made in this subject, as you all know, and as in most subjects, many fads come and go. Sufficient time has now elapsed, I believe, for us to judge some of the recent movements in this subject, and I shall speak rather frankly and freely of my own notion of these movements. You are in no way obligated to believe what you hear.

In 1914 I set up certain innovations in diabetes in the form of a treatment based on something new in diet, namely, the limitation, not only of carbohydrate, but of total calories, the idea being that the tolerance is governed not only by the carbohydrate, but by the fat intake and body weight. In criticizing some of the ideas that have come up since that time, I am not attacking other individuals in expressing my opinion freely, but rather defending my position against their attacks, and the question as to who is right will simply have to be decided by experimental evidence.

The treatment of diabetes is today practically twofold: by diet and by insulin. I shall consider the subject under these two heads, and shall begin under each heading by stating certain things which, in my opinion, are not true.

DIET TREATMENT

First of all, it is not true that insulin diminishes the need for accuracy of diet. Diet is just as live a question as it ever was, if not more so. Accuracy of diet is needed as much as ever, if not more, because formerly there was greater leeway in treating diabetes on lax diets; now if a diabetic takes insulin he is almost compelled to have a weighed diet. For that reason many physicians who never studied diets before are studying them now in order to treat diabetes intelligently with or without insulin. A very striking suggestion in that connection has been put forth by Gray, who, in a recent paper, raises the question: "Is insulin more important to the diabetic than food scales?" The point brought out is that, from a practical standpoint, food scales may be considered more important than this wonderful discovery, because most diabetics do not, after all, need insulin, but they all need diet, and those who do need insulin cannot be treated satisfactorily with insulin unless they have accurate diet. That is one way of expressing the importance of diet in diabetes. Now we still have deaths in patients treated with insulin. We still have deaths from old-fashioned diabetes, because those patients do not follow diet, and any idea that one can use insulin successfully simply by planning the dosage of insulin and disregarding everything else is contrary to fact. Diet, then, maintains its full importance.

Second. It is not true that any form of diet can take the place of undernutrition. There are various forms of reduced diet, the strictest of all being total fasting. The more you undernourish the patient the more you raise his tolerance. To feed him with the number of calories he is burning is not equivalent to fasting; that can be shown experimentally.

Third. It is not true that the respiratory metabolism can furnish a guide to the diet. Perhaps such remarks may unfavorably impress persons who do respiratory metabolism. I appreciate their work very highly and its importance for theoretical and practical purposes, but tonight I am speaking of a practical subject to practitioners. A large proportion of writers on this subject now speak of taking the basal metabolism and figuring the basal diet of the patient, and then building up a diet from that, giving him first the basal requirement. This may be very interesting if you are doing research work on the subject,

or perhaps if you have a new machine and like to play with it or to impress patients. But for actual practical benefit I see no advantage in taking observations of the respiratory metabolism. It does not guide one in the treatment, and it does not tell how many calories the patient needs. Whatever his basal metabolism is we must guess at his active metabolism, and it is just as easy to guess at the whole thing in the first place.

Fourth. Another point bearing closely upon this whole subject is the question of protein. It is not true that protein has any specific injurious action on diabetes. A number of older writers have argued that it has some influence as a special toxic food injuring the pancreas somehow or other. More recent writers have speculated that it may be injurious through its specific dynamic action, raising the metabolism, and that for this reason protein should be especially restricted. The only answer is that it is not true in actual practice. If you think otherwise, try it. Protein makes somewhat less tendency to glycosuria than the equivalent in preformed carbohydrate. If there were any special toxic action in protein, or if it especially influenced the tolerance through its raising of the total metabolism, it would create more of a demand for insulin than carbohydrate. The contrary is true. Carbohydrate creates more of a demand for insulin than its equivalent in the form of protein. Therefore, protein is not to be particularly dreaded in diabetes.

Fifth. The total calories of the diet cannot be ignored. This means in particular that fat cannot be ignored. The tolerance or the diet cannot be figured solely in terms of carbohydrate, assuming that all diets are the same if they contain equal glucose values in the form of carbohydrate as such, or protein, counting it as 60 per cent carbohydrate, or with allowance for any supposed carbohydrate value of fat. You cannot figure diabetic diets as equivalent on that basis, but must consider also their total caloric value. This principle is largely ignored in recent writings on diabetes, but is just as valid as ever.

Sixth. As a continuation of this idea, the high fat diets, so-called, which have been the most recent of the diabetic fads, and which are very extensively used today, in my opinion do not represent any valuable new step in the treatment of diabetes. They are practically a reversion to the old treatment with low carbohydrate and protein and high fat. They are a negation of the principle of the influence of total calories. The basic principle of the high fat diets is that carbohydrate is all that counts; that if we restrict the carbohydrate enough, and also restrict protein, the more calories we give in fat or perhaps alcohol the better. That is untrue. I have published the proof, and some others have also published confirmations. Until these experiments are overthrown the principle of total calories cannot be ignored. As a matter of fact, Newburgh and Marsh, whose names are associated with high fat diets, have not ignored this principle in actual practice. If one will look up their papers he will find that, although their cases on the average are mild, the total calories in their diets are not high. Men like Petrén in Europe have used actually high fat diets, running these diets as high as possible, often above 3000 calories. But Newburgh and Marsh have done better. After an initial undernutrition with about 900 calories, they have limited their milder cases to about 2400 calories. Also, if you look up their original papers, you will find that their severe cases have received final diets only as high as 1500 calories. In other words, their diets were on the whole not higher in total calories than the diets of Joslin, myself or others for similar cases. They were not able to take thin diabetics and make them fat; nobody ever succeeded in doing that until insulin came. The reason is that the emaciated patient suffering with severe diabetes cannot assimilate high calories in any form.

Seventh. It is not true that the practitioner need go to the trouble of calculating ratios of the ketogenic and anti-ketogenic substances in the diet. That is again one of the fads that have complicated diet unnecessarily. In the first place, if we give a patient any ordinary combination of foodstuffs we are likely to use, we shall find that we have nothing to fear from acidosis provided glycosuria is kept absent. Newburgh and Marsh are perfectly correct in that principle, which is not new. If we keep a patient sugar-free we can give him huge quantities of fat in proportion to carbohydrate and protein, and not get serious acidosis. Wilder has published recently some very narrow ratios of carbohydrate and fat in the diet, allowing the patient to show some ketosis and finding that no apparent harm was done. It need not injure the patient if he does show a little acetone in the urine. It is extremely important theoretically to know what combinations of materials make acetone in the body and how and why ketosis arises. But even from a theoretical standpoint it is hard to tell where ketosis begins, and whether we should be guided by the first bare trace of acetone or only by a large increase. Practically no two authors agree as to the amount of ketogenic and anti-ketogenic materials a diet should contain. On the practical side I would say that we are interested only in making the patient safe and evidently various ratios are safe, but the main point is that they all fall within any diet we are likely to choose. Some people prefer higher fat, some lower fat, some higher carbohydrate and some lower, but I do not know anybody who can make any palatable combination of foods that would produce any serious acidosis in a patient who is sugar-free. Therefore, physicians need not worry too much about the scientific phrases.

Eighth. It is not true that there is any valid ratio of tolerance for different foods on the basis of their glucose value. It has been argued that in figuring the diet we must count the glucose available as 100 per cent for the carbohydrate, at 56 or 60 per cent for the protein, and at 10 per cent for the fat; and that thus diets can be planned which will prevent acidosis and at the same time supply high fat and high calories. The purpose of these calculations is to give the patient as many calories as possible. High caloric diets are what these authors have aimed at; their fundamental principle has been that only glucose need be considered, and that if you exchange other foods for fat you can give more calories in the form of fat, and therefore a higher fat diet is better. That is where the mistake lies. It is

not true that you can exchange 10 grams of carbohydrate for 100 grams of fat and have it mean the same to the patient. If you do that you are subtracting 40 calories and adding (with your 100 grams of fat) 900 calories; but they are not the same. If you could do this you could soon run up to a diet of 4000 calories, in return for taking away perhaps only 180 calories. What actually happens if you exchange glucose for fat is at first perhaps an apparent increase of tolerance or decrease of the insulin need. If a patient is on, say, 1500 calories, and you subtract 20 grams of carbohydrate and add 200 grams of fat, the first effect may be a lowering of the insulin dosage for at least a few days. Afterward you will find that the insulin dosage will creep up and the slow delayed effects of the fat will become more evident as the weeks and months go by. We have had plenty of examples of the harm resulting from adding calories in that fashion. One patient could be kept sugar-free on 40 units of insulin a day, but by substitutions which doubled his calories without changing the theoretical glucose value he reached a point where he was taking 140 units of insulin and still excreting 90 grams of glucose. It is easiest to see this result in the severe cases; therefore, they are the best for tests. But in all cases total calories must be considered, and foodstuffs cannot be interchanged on a mere basis of glucose content.

Ninth. It is not true that any special or artificial kinds of food can evade this law. Levulose, caramel, intarvin, glycerol, and other artificial or unusual forms of food have been introduced as things which might not form glucose in the metabolism, thus returning to the old notions of diet. These foods may not impose the same strain that carbohydrate does. Foods differ in this respect. The greatest strain on the pancreatic function is imposed by carbohydrate, the next by protein, and the least by fat. But even if the artificial foods may perhaps impose less strain than carbohydrate, they do not escape the law of total calories, and it is not true that you can give any food to diabetics without taking account of its caloric value.

Tenth. It is not true that the influence of body weight and obesity is yet explained by any known metabolic laws. We do not know why obesity predisposes to developing diabetes. Joslin especially has shown the fact statistically. Obesity or gain of weight also has a marked effect on the tolerance of diabetics. The tolerance is greatly increased by reducing the weight. Of course, as we increase the weight we increase metabolism, but as far as known the increased strain on the pancreatic function is out of all proportion to the increased metabolism. If you increase a patient's weight by ten, fifteen, or twenty pounds, you increase his metabolism appreciably, but in some cases you may increase the insulin requirement four or five times. The tissue he puts on is likely to be almost pure fat, and adipose tissue is not known to increase the metabolism greatly; but it seems to be this very adipose tissue which chiefly increases the insulin requirement. When a patient begins to lay on fat his insulin requirement goes up. The reason may be figured out some day in terms of metabolic laws, but up to the present the explanation seems not to have been found.

INSULIN TREATMENT

Turning to the subject of insulin, I shall mention a similar list of things, which, according to present evidence, are not true.

First. Insulin is not required in the majority of diabetic cases. It is easier and simpler to get along without it, and most cases are mild enough that you can get along without it.

Second. It is equally well known that insulin does not cure diabetes. We have tried maximum dosage in children with very mild or early cases, and have not succeeded in curing them; these children, like all other patients, have remained diabetics. In a few cases the tolerance does rise tremendously, so that insulin may be greatly reduced and sometimes stopped altogether. There is always the hope that in some rare cases the diabetes may come to an end, particularly if there is an acute or subacute pancreatitis underlying the diabetes. It is theoretically conceivable that if the pancreatitis gets better the patient may recover. But ordinarily the rule is, once a diabetic, always a diabetic; and that rule has not been broken by insulin.

Third. It is not true that insulin has any specific curative effect upon diabetic complications. If we become too optimistic on this subject we are likely to be disappointed. It was always true that if we controlled the diabetes the complications became better. We thus obtained good results in gangrene, without insulin. Insulin furnishes a quicker and surer means of arresting all complications; but if a patient has deep gangrene he still, as a rule, loses his foot. We saved some feet before we had insulin, and we do not save appreciably more of them nowadays with insulin, because there is the same basis of arteriosclerosis. We save some lives we could not save before, because patients can be kept sugar-free more readily, but insulin has no specific action on the gangrene. Sugar freedom obtained by insulin is no more important than sugar freedom obtained by diet in its effect on complications.

Fourth. It is not true that there is any practical method of giving insulin except by injection subcutaneously or intravenously. There has been interesting work done experimentally with the administration of insulin by various other ways, especially in animals. But from the practical standpoint it does not work, and if any absorption were obtained it would be too uncertain and irregular for practical purposes. Also, no other pancreatic preparation has been shown to have any effect. Pancreatic substance taken by mouth in any form, or proprietary remedies alleged to stimulate the pancreas or to act in some way other than insulin, have not sustained their claims and have no scientific basis.

Fifth. It is not true that any diabetic cases are refractory to insulin. It is interesting to watch the literature for reports of that kind. I felt pretty sure they would come from people who use high caloric diets and who do not recognize certain principles in diet. Those reports are coming in. One of the most noteworthy was published by Falta last July. He reports a case in which he gave insulin, as high as 160 units a day, and it did not affect the blood sugar when given either subcutaneously or intravenously. Therefore, he claims that this case is re-

fractory to insulin and assumes that it is not due to deficiency of insulin or of pancreatic function, and must be due to some other cause. If you study this case you will observe that, although during a few hours following his doses he did not find much fall of blood sugar, yet he admits that the total sugar excretion on insulin days was less than without it. Then, too, the patient is described as being of medium height and weighing approximately 200 pounds, decidedly obese. That kind of a result can be duplicated any day. By fattening a severely diabetic patient, you can get him into a condition where insulin can be poured in almost like water, and the largest doses will have minimal effects. If Falta's patient were brought down to a reasonable weight, it would probably be found that the case not only can be controlled by insulin, but is not very severe. Such difficulties are going to be encountered by a number of people who give fats and other foods in such quantities as to keep their patients obese. I mentioned our own experience where a patient took 140 units a day and still excreted as much as 90 grams of sugar a day.

Sixth. Following up the point just mentioned, it is not true that there is evidence of disturbance of any gland other than the pancreas in typical cases of diabetes. Insulin prepared from the pancreatic islands does control diabetes in every case, and no preparation from any gland other than the pancreas has the slightest influence on diabetes. Yet in spite of this discovery, the pluriglandists base an argument on the fact that you can give insulin to lower the blood sugar, and give adrenalin to bring it up. One lowers, the other raises; therefore, is there not an antagonism? and the answer is, no, there is not. In the first place we have no evidence that adrenalin is ever thrown into the blood stream in such quantities normally in the living body. Furthermore, there is no evidence of a true antagonism. Adrenalin tends to produce glucose from glycogen and thus throws sugar into the blood stream, but it does not cause inability to use glucose, which is the essential feature in diabetes. Furthermore, there is recent evidence that insulin does not serve specifically to build up glycogen, and under some circumstances actually reduces it. Therefore, no true antagonism exists between adrenalin and insulin, and there is no proof of any glandular antagonism in the body. Diabetes is purely a pancreatic disease.

Seventh. It is not true that the mechanism of insulin action is yet known. The theory of Winter and Smith that there is something peculiar in the character of the glucose, that the blood sugar in diabetes is chemically different from that of the normal organism, is not apparently gaining support. One of the most interesting future possibilities is that we may learn how insulin is related to the carbohydrate metabolism, or to the total metabolism. Even the toxic effect of insulin is not yet explained. One of the brilliant observations of the Toronto school was found in the symptom complex of hypoglycemia—the effect on the body of too little blood sugar. But insulin poisoning is not due strictly or solely to hypoglycemia. Your patient may show severe symptoms of collapse, or even unconsciousness or convulsions, and yet not have an extremely low blood sugar. We do not know what makes the intoxication in such a case. We do know that glucose relieves it, regardless of the blood sugar level.

Eighth: It is not true that the insulin requirement is governed by the total metabolism. Exercise is a very powerful means of raising the total metabolism, but it rather lowers the insulin requirement. The patient taking heavy exercise does not need more insulin than before; he needs less. Whether insulin is related to the basal metabolism is not clearly proven. There is partial evidence in favor of the conception of basal metabolism being a deciding factor. In fasting, glycosuria is reduced, the insulin requirement is reduced and the basal metabolism is reduced. We do not know whether the fall in metabolism is the essential reason for the relief of the strain upon the pancreas. In the majority of cases when the basal metabolism is raised (e. g., by gain of weight, by hyperthyroidism or by fever) the tendency to glycosuria and the need for insulin is increased. But this suggestive evidence is not conclusive.

Ninth. It is not true that either the diet or the urine furnishes any uniform basis for calculating the insulin dosage. In the early days many conjectures were made that if there was a certain quantity of glucose in the urine or in the diet a certain number of units of insulin would be needed. That is not true. The only way to find out the insulin dosage is to try it. For instance, there is a difference according to the source of the glucose. If a patient shows glucose in the urine from adding carbohydrate to his diet, that is one thing; if he shows the same amount of sugar in the urine from adding high calories in the form of fat, that is very different. The latter form is much harder to clear up, and takes more insulin. Also the effect of complications is well known. Acidosis, for some reason, multiplies the insulin requirement. There is also an observation from Toronto which seems to be correct, that each unit of insulin becomes less effective as the total units are increased. If you give a patient 100 units of insulin, each unit is less effective per gram of glucose than if you give 10 units. There are other factors, but certainly there is clinical proof that only by testing the individual case can one decide how much insulin is needed.

Tenth. It is not true that there is any specific progressive pathological process in diabetes if the pancreatic function is saved from functional overstrain. Several years ago I put forward this doctrine, and I doubt if anybody believed it at that time. Now with insulin at hand, probably everybody will believe it, because with insulin we can relieve the strain upon the pancreatic function more easily and more thoroughly than could previously be done by diet. In severe cases it was formerly very difficult to keep the blood sugar down and clear up obvious signs of overstrain of the pancreatic islands. Now that this is done on a wide scale with insulin, everybody can see that the progressiveness of diabetes can be halted. The reason for progressiveness is found in the hydropic degeneration of islands of Langerhans, photographs of which you have seen passed around in this meeting. Hydropic degeneration is the vacuolation, swelling and destruction of the island cells, which results from functional overstrain. The islands get it only when they try to

work beyond their capacity. When that process is checked either by diet or by insulin, diabetes apparently does not progress.

PRACTICAL DETAILS

Altogether twenty points have been mentioned as not true, and it may be asked, "What is true?" There remains much room for individual judgment as to the method actually used, if a few basic principles are observed.

In the first place we prefer beginning with institutional treatment, which means that the patient generally remains in the hospital for two or three weeks. We believe the case can be studied better and the patient taught to care for himself better by being in an institution, and the period should not be too short or he loses the full benefit.

Then, using the same two headings, diet and insulin, I shall take up first, diet.

The first requisite is a doctor's ability to calculate a diet. If he cannot figure a diet in carbohydrate, protein and calories, he ought not to treat diabetes. Anybody can be a specialist if he will simply familiarize himself with the primary principles of diet, but if he will not take that trouble, he ought to send his diabetic patients to somebody else. But if he goes to this trouble he can treat diabetes more easily and also more successfully than can be done by following any hard and fast set of rules.

As regards proportions of the different foods, we believe that 60 to 80 grams (or more in mild cases) of carbohydrate and about the same of protein makes the most satisfying diet, is most conducive to comfort, strength and fidelity, and gives the widest margin of safety against acidosis. In a few cases lower carbohydrate and protein may be useful for reducing the dosage of insulin or avoiding it altogether. In all cases it is a matter of preference, not a choice between right and wrong, as to whether the diet contains high or low proportions of carbohydrate or fat, provided the total calories are suitably restricted. If you believe in carbohydrate and protein rations as low as 30 or 40 grams per day you may treat diabetes very efficiently with them, but comparative tests will show you that in the long run little insulin is saved and the patients are distinctly less comfortable than with the more normally balanced diet above mentioned.

As regards total calories, our diets are such as to keep the patients not above the normal average weight. Sometimes they are fully up to the normal, and frequently five or ten pounds below the normal average, because in this way less burden is placed upon the pancreas, and on the whole the patients do better. The influence of the total calories and body weight far exceeds the influence of a few grams more or less of carbohydrate or protein.

Then, as regards insulin, we use it when there are severe complications, or when the patient cannot gain tolerance for an adequate diet without insulin. Blood sugar determinations are desirable. Some persons have tried substituting other tests, particularly the new quantitative methods for sugar in normal urine, but I believe the consensus of opinion is that the best method is that of blood sugar tests. They may not be absolutely indispensable, but they are extremely valuable and are generally the best basis of treatment.

The dosage of insulin is that which will keep the patient completely free from glycosuria, and the blood sugar as nearly normal as possible. It cannot always be normal. But the patient with glycosuria or extremely high blood sugar is liable to infections, and is more apt to develop acidosis and perhaps die suddenly. With existing glycosuria, even though the patient is on high insulin dosage, there is very serious danger of a sudden outbreak of acidosis, causing death within forty-eight hours.

The total daily dosage is divided into a number of injections, according to the size of the total dose. We practically never give more than 20 units in one dose. We seldom give less than two doses per day, even if the total number of units of insulin is low. Insulin may be given with meals; that is the commonest way, but in some of the severest cases we have published a method of giving it about one hour before breakfast for the first dose, and an hour or two after supper for the third dose, as that plan shortens the night period. This reduces the tendency to fluctuation in the blood sugar, and there is no particular reason why every dose should be given with a meal.

Also the plan is to keep the total insulin as low as possible. If it rises too high, for example, above 100 units, it is almost impossible to keep the patient free from glycosuria or hypoglycemia, one or the other. The only remedy is to cut down the insulin dosage. The way to do that is to reduce the patient's weight. Therefore, as far as possible, we use a low caloric diet to keep the body weight somewhat below normal, and in that way ordinarily we keep the insulin dosage down, so as to allow the case to run smoothly. The patient who can use the least insulin is the best off in the long run.

The special treatment of complications cannot be gone into in detail, partly because it has been covered so often before.

The point I would emphasize, in conclusion, is that all the evidence, theoretical and practical, indicates that if patients are handled properly in these two respects—diet and insulin—every case of diabetes can be controlled, and this control can be maintained without downward progress and without any deaths occurring on account of diabetes.

Some Causes of Ageing—"We doubt if we can ever discover means of greatly lengthening life," concludes Malford W. Thewlis (Medical Journal and Record). "There are many factors," continues this author, "at play in the production of premature senility, such as an abnormal mode of living, and the excitement and worry of modern life. Normal old age seems to be a mystery, as far as its actual cause is concerned. There seems to be a law of Nature which brings about old age just as it brings birth in a given length of time, and puberty at another. If Rolleston is right, there is a more or less definite cycle during which cells multiply and after which they cease to do so. It seems to be the best explanation we have of the cause of normal old age. As for the causes of abnormal old age, to repeat, numerous factors must be considered."

"**. . . There is no greater power** in the realm of man today than the printing press, and it would be infinitely more powerful and productive of results if those whose thoughts go out to millions through it would write in a spirit of service and in the sense of stewardship."—Edward W. Bok.

CAESAREAN SECTION FOR PELVIC OBSTRUCTION

By ALICE F. MAXWELL, M. D., *San Francisco*

Contracted pelves in white women are comparatively rare—the degree of contraction in the large majority of cases is such that spontaneous pelvic delivery is the rule. This is the most advantageous method of labor for mother and child. Caesarean section, under ideal circumstances, carries a definite maternal mortality and must not be regarded as a panacea for obstetrical complications.

DISCUSSION *by Titian Coffey, Los Angeles; L. I. Breitstein, San Francisco; Charles E. French, San Francisco; Edward N. Ewer, Oakland.*

BEFORE Sanger introduced the method of suturing the uterus, the appalling maternal mortality which followed Caesarean section was the factor which limited its employment to cases in which no other method was available to secure a living child. Pelvic obstruction was the one and only indication which justified its performance.

As the result of the increasing safety of modern abdominal surgery, and because of the ease and simplicity with which the operation can be done at the present time, an ever-growing number of fancy and flimsy indications are advanced for its employment. Varicose veins, asthma, abdominal pain, epilepsy, breech, hydramnios, etc., as indications serve to illustrate the inadequate conception of the real danger of Caesarean section. This loss of perspective and unsuitable widening of its applications reflect the lack of even the fundamental principles of obstetrical art or else an unwillingness on the part of the obstetrician to sacrifice himself, or to give of his time and thought in an effort to assist a woman to deliver herself by the natural passages. The impression in the mind of many medically trained men that Caesarean section is a panacea for all obstetrical problems suggests a serious lack of knowledge of the inherent danger of abdominal surgery to the pregnant woman. Statistics from large clinics have shown that, even under ideal circumstances, the maternal mortality is 2 to 4 per cent if performed upon women in labor, or after vaginal attempts at delivery have been made the mortality varies from 11 to 34 per cent.

Arnold Roux, in 1911, showed that: 245 cases not in labor, 3.8 per cent mortality; 274 cases in labor, membranes intact, 2.6 per cent mortality; 166 cases in labor, membranes ruptured, 10.8 per cent mortality; 64 cases frequent exam. or forceps, 34.3 per cent mortality.

Guy's Hospital report of 121 cases of Caesarean section, from the years 1910-1920, show mortality of 6.8 per cent.

Holland and Kerr's figures from Great Britain and Ireland, from the years 1911-1920, in 4000 sections show that: 1200 cases not in labor, 1.6 per cent mortality; 389 cases early in labor, 1.8 per cent mortality; 220 cases late in labor, 10 per cent mortality; 35 cases after induction of labor, 14 per cent mortality; 107 cases, forceps or craniotomy, 27 per cent mortality.

Williams, in 1921, analyzing 183 sections done in 20,000 deliveries, had a gross mortality of 5.51 per cent—net 3.5 per cent; 4 per cent in conservative Caesarean, and 1.8 per cent in Porro sections. Data furnished by questionnaires sent to hospitals throughout California disclosed a startling situation, namely, in 1922, there was a 10 per cent maternal mortality following Caesarean section.

Newell, as the result of his investigations of the mortality of Caesarean section in some of the smaller communities near Boston, concluded that the operation as performed by local operators for alleged indications was the most fatal of surgical procedures.

Any break in surgical technique of the corps of assistants needed at the operation will result in disaster to the woman. Any surgeon may have a long series of cases without any deaths, but, given the opportunity, in the end he cannot escape the inevitable minimal mortality.

If these facts are borne in mind, it would seem imperative to consider the indications which actually warrant our employing a procedure which admits at least 2 to 4 per cent mortality under the most ideal and advantageous situations, and a death rate of 35 per cent plus in unfavorably modifying circumstances.

The most frequent and important indication for Caesarean section is pelvic obstruction.

Admitting that the size of the birth canal has a distinct bearing on labor, it must not be forgotten that the vital consideration, nevertheless, is the relative proportion which the passenger bears to the passage, which is, after all, the determining factor of a particular labor. It may be no more difficult for an undersized child to pass through a contracted birth canal than an overdeveloped child to pass through a normal pelvis. The strength of the uterine contractions has also a definite bearing on the outcome of a labor, for, given two women with the same degree of disproportion between the pelvis and child, the efficiency of the labor pains will be the deciding factor in effecting a spontaneous labor in one, or forcing an operative delivery in the other. Pelvimetry serves to demonstrate the degree of adequacy or inadequacy of the pelvis; the size of the child, its position and the vis-a-tergo must enter into the calculation of the proper treatment of an individual case.

Pelvimetry indicates that the frequency of contracted pelves varies greatly. Thus, the German clinics give a frequency of 8.24 per cent; the Austrian 2.1 per cent, and the French 5.1 per cent. In America, Williams noted contracted pelves in 24.4 per cent, the proportion in the black race being three times as often as the white—40.9 per cent and 13.4 per cent, respectively.

Crossen reports 1800 cases with 1.7 per cent showing pelvic contraction. In the University of California series of 4604 cases, there were 3.5 per cent with pelvic contractions.

It is generally conceded that 80 per cent of women with contracted pelvis, even with the impossible or doubtful types, will deliver themselves spontaneously if allowed to go into labor. Thus Schauta, in 5288 cases of contracted pelves among 39,397 births, had a spontaneous labor in 77.8 per cent, with a maternal mortality of .09 per cent and a foetal of 2.2 per cent.

Holland and Kerr's review of 4000 sections in

Great Britain and Ireland showed that 3372 sections were done for contracted pelves, with a mortality of 4.1 per cent. Guy's Hospital reports in 1920, 121 cases with contracted pelvis as indication 107 times; Williams, in list of 183 sections in 20,000 deliveries, found disproportion of the pelvis furnished the indication in 144 cases (78 per cent).

In our series of 4604 cases at the University of California Hospital, 3.5 per cent (162) were found to have contracted pelves. Yet 65 per cent of these women were potentially spontaneous, if we deduct the low forceps deliveries in which there was no dystocia due to the pelvis, and Caesarean section was performed only twenty-one times for contracted pelves.

That eight out of ten women will deliver spontaneously must be emphasized and should serve to impress upon us the necessity of exercising calm judgment in handling these women; it should also prevent meddlesome interference early in labor which may block this hoped-for outcome in the large majority, or in the small less fortunate group render impossible sane surgical treatment. We all agree that it is best for the woman to deliver herself spontaneously, for no other method is associated with so little danger to the mother and child.

If contracted pelves occur in about 10 per cent of white women, and the large majority of such contractures are compatible with spontaneous pelvic delivery, it is apparent that even in a large clinic Caesarean section will be rarely performed for pelvic obstruction.

However, there are absolute indications for the performance of Caesarean section, namely, when the abdominal route offers the only possibility of saving the mother or child. It is universally agreed that when the true conjugate measures 5 cm. or less, abdominal section is essential to accomplish delivery, regardless of the presence of uterine infection, for such degree of contraction renders impossible delivery by the natural passages of a foetus, even though crushed. With our present-day prenatal observations and pelvimetry, such a degree of contraction cannot be overlooked and its recognition at once establishes the necessity for surgical treatment at term or before the woman has been allowed to go into labor; in other words, to operate under ideal circumstances. Then the operation is an invaluable procedure and undoubtedly has saved many mothers and children who, with other treatment, would be hopelessly doomed. This type, in whom natural delivery is impossible, forms a very small number, considering the frequency of contracted pelvis, for we emphasize in the vast majority of cases spontaneous labor at term is mechanically possible. Only a small group in whom the issue is doubtful may require the nicest judgment in treatment to safeguard the mother and child's best interest.

Relative indications for Caesarean section are afforded by a pelvis with a true conjugate of such length that it is practically impossible to deliver a non-mutilated child through the bony pelvis. With this degree of contraction, section at term will meet the best interests of both patients. Even with less marked degree of contraction, i. e., 7.5 to 8.5 cm. in flat pelvis and 7.5 to 9 cm. in generally contracted, the operation is frequently done as an elective procedure, for, while spontaneous labor is possible in a large proportion of this class, it will be exceedingly difficult to prognosticate the course of labor in advance—for the efficiency of the uterine contractions is the undetermined variable and many mothers and children may be hopelessly injured or lost, should this last factor be weak and infrequent in character. The best interest of the mother will not be conserved if the mere possibility of pelvic delivery counterbalances the physical and psychic trauma of a severe labor with the attending tears of the supporting structures of the pelvic organs and resulting prolonged invalidism.

In these borderline cases, helpful conclusions regarding the possible outcome of labor can be obtained by noting the presence or absence of overriding of the head on the symphysis. If the head does not override the brim and can be pushed into the pelvis (under anesthesia, if necessary to secure relaxation), it is practically certain that, with ordinary labor pains, a pelvic delivery can be looked for. However, with overriding or inability to push the head into the brim, the outcome is not so certain, and modifying factors must come up for consideration of the treatment of each individual case. If, for example, we have an elderly primipara with this pelvic condition, a section at the proper time will insure a baby with the irreducible minimum of any surgical operation to this mother. The same situation occurring in a woman who gives a history of previous obstetrical disasters will warrant a section if we admit the tendency to enlargement of successive children. Careful measurement of the head and comparison with the pelvis will, of course, materially modify our judgment, although a history of repeated foetal death from pelvic dystocia, even with slight degree of contraction, will influence our choice toward section as the conservative method of delivery for mother and child.

The position which the presenting part bears to the inlet is significant. A face or brow presentation indicates definite and maladjustment; a posterior position of the head may be a modifying factor which may definitely influence our decision. The rigidity of the maternal soft parts and cervix, the moulding possibilities of the child's head, as affected by width of sutures and fontanelles as demonstrated by rectal palpation, the time of rupture of the membranes and the efficiency of the uterine contractions must all come up for consideration.

The effect of a long, hard labor upon the particular woman with a borderline pelvis is of great importance, some patients being so nervously and physically constituted that even a moderate strain will often impair the health for a period of many months or years. Women with cardiac weakness should always be spared the possibility of a decompensation resulting from prolonged labor. If we feel that the physical or nervous stamina is below par or that severe exhaustion after a moderately difficult labor will follow the effort to deliver by the natural passages, a section will be the conservative procedure.

Because it is not always possible to decide upon the proper course, and because we recognize our

fallibility in prognosticating the outcome of a particular case, the test of labor is frequently applied, for it affords a strong hint as to the probable outcome. If we find that labor is initiated by strong uterine contractions, that the cervix is dilating steadily, as determined by rectal examinations which should be definitely limited in number (for we do not admit this method of examination is done without danger of introducing infection into the cervix) and that the head is fixing and moulding through the pelvis, we feel that the patient should be given the opportunity to deliver herself. If, however, early in labor some complicating factors, such as inefficient, weak contractions, face presentation developing during labor, premature rupture of the membranes with only beginning cervical dilatation should be added to the complexity of the problem, we must be prepared to modify our plan of treatment. Early interference in labor with the woman not compromised by vaginal examination, with the cervix just beginning to dilate, particularly if the membranes are intact, practically adds nothing to the danger of abdominal delivery. We do not feel, however, that when the test of labor has been allowed to extend over a period of several hours, even in the absence of vaginal examinations, that the ordinary conservative section can be considered as the safe alternative method of delivery. Every hour of labor adds ten-fold to the potentiality of infection. Under these circumstances, we cannot be justified in submitting a patient to the risk of a procedure which the most conservative figures show will doom at least one out of ten mothers.

In considering pelvic obstruction as an indication for section, contractions of the outlet must not be overlooked. Funnel pelvis is the most common type of pelvis abnormality in white women, according to Williams. In these cases, the pelvis assumes male characteristics, the pelvic arch is narrowed, with resulting limitation of space available for the foetal head beneath the symphysis. The posterior segment of the outlet here must be accurately determined, for the head must be accommodated largely by the area between the tuber ischii and the lip of the coccyx. Pelvimetry will determine the degree of contraction, but again modifying factors must help to make the decision. The size of the child, its position, age of the patient, rigidity of the soft parts, are important in determining the policy of conducting the particular case. Pubiotomy must always come up for consideration in treatment of contractions of the outlet, for the widening of the outlet depends directly upon the amount of separation of the pubic bone. With the patient advanced in labor and the child obstructed at the outlet, Caesarean section cannot be compared to pubiotomy as the conservative method.

In conclusion, I would like to stress the following:

Contracted pelves in white women are comparatively rare. The degree of contraction in the large majority of cases is such that spontaneous pelvic delivery is the rule. This is the most advantageous method of labor for mother and child. Caesarean section, under ideal circumstances, carries a definite maternal mortality and must not be regarded as a panacea for obstetrical complications.

University of California Medical School.

DISCUSSION

TITIAN COFFEY, M. D. (1136 West Sixth Street, Los Angeles)—Two of the most valuable points brought out in Doctor Maxwell's paper that appeal to me are, first, the incredible and unheard of so-called indications for Caesarean section that are being used today all over the country; second, the fact that a large majority of cases of contracted pelvis deliver spontaneously at full term. I am glad she has stressed these points, for they are of the utmost importance and should be constantly borne in mind when studing the parturient woman.

Caesarean section at present is done for almost any indication and I for one would be glad to see the pendulum swing back and a more sane attitude taken as regards relative indications.

The positive indications are few and well recognized and need not be referred to but the border line cases are the ones that demand a nicety of judgment and utmost skill on the part of the obstetrician in determining what is best for the mother and child.

Disregarding extreme emergencies such as eclampsia, placenta previa, etc., that apparently may present a relative indication and then almost instantly change into a positive one, it is our duty to so study the pelvic cavity before confinement and the relation of the presenting part thereto, that we have pretty well made up our minds as to the character of labor a given woman will have and what our procedure is likely to be to effect delivery if complications arise. In a young primipara, upon first examination in beginning pregnancy, when the parts are tight and snug we are apt to underestimate the size of the pelvic cavity and think section will be necessary at the end. Many patients are told this or else they are told they can never have children as they are too small.

It is amazing as pregnancy goes on how the parts soften and how much larger the pelvic cavity becomes a few weeks before full term. We may still find the occiput high or attempting to engage at the brim, but we now have a softened enlarged pelvic cavity that puts us in a position to make a much better estimate as to whether or not the head will go through than at our earlier examination.

It is a good working rule that if the promontory of the sacrum cannot be felt by the examining middle finger an average-sized baby will go through that given cavity.

Especially toward the last, all doubtful cases should be kept under close observation so they may be classified and treated as "operations of choice" rather than thrown into the haphazard class and any old chance taken. Considering the appalling mortality in cases that have been neglected, when the golden opportunity has been lost by injudicious "man-handling," certainly version and extraction is a preferable procedure to section.

In other words, the vast majority of cases, by careful preliminary study, put us in a position to know our method of delivery long before they become even relative cases.

Induction of premature labor two to three weeks in advance of full term or induction of labor at term is not done frequently enough. Doubtful cases should never be allowed to go over time. By the induction of labor in suitable cases many mothers will be saved section.

Doctor Maxwell's point that a large majority of cases of contracted pelvis deliver spontaneously is well taken and should never be lost sight of.

L. I. BREITSTEIN, M. D. (350 Post Street, San Francisco)—Doctor Maxwell's paper is a very important contribution and should be studied by every one doing obstetrics. The statistics that she quotes, namely, a maternal death-rate in elected and clean cases under ideal conditions averaging from 2 to 4 per cent, and in cases where women were in labor or after vaginal attempts at delivery have been made, varying from 11 to 34 per cent, are simply appalling. It certainly appears as a crying indictment against the Caesarean section operation. On closer study, the trouble is not with the Caesarean section

operation, but in the judgment of men doing obstetrics. I feel sure we can reduce the maternal death-rate if we would approach the problem from the following angle: Not so much from the stand that we should do a Caesarean section, but from the stand when should we not do a Caesarean section. If certain rules were laid down contra-indicating this operation, and the hospital requirement demanding consultation before this operation is permitted, I am sure the number of mothers dying from Caesarian section would rapidly diminish.

In my service at Mt. Zion Hospital a good many of our maternity cases are drawn from women who were born in Russia, Balkan States, Turkey, Armenia, Palestine and Egypt. We find our average of cases of contracted pelvis runs higher than at the University of California Hospital. The types we see are:

1. General contracted.
2. Flat rhachitic with wide contracted outlet.
3. Masculine type with contracted outlet.

Our working rule is as follows:

1. For elected and absolute clean cases we employ the classical Caesarean section, using the high incision.

2. For cases which have been given the test of labor or where membranes have prematurely ruptured and thirty-six hours have elapsed, or in cases where one or two vaginal examinations have been made, even under aseptic technique, these cases are considered as potentially infected, and we resort to the low cervical section.

3. All other cases not included under the above two heads, with the exception of the absolute indication, are not sectioned, but delivered from below, even if we have to resort to a craneotomy. I am happy to say our maternal mortality averages from 1 to 2 per cent.

CHARLES E. FRENCH, M. D. (Flood Building, San Francisco)—There are a certain number of women of the upper class, somewhat advanced in years, who request a Caesarean section rather than undergo the pains of labor. They know something of the operation, have perhaps seen its brilliant results in friends, and have been assured by medical men that in uncomplicated cases, if done before the onset of labor, it is no more serious than an interval operation for appendicitis. If the results of these carefully gathered statistics, taken from such a diversity of sources, were presented to such women they would be more reticent about having this operation. Nitrous oxid analgesia, with version or forceps, if necessary, means perhaps a little more pain, but at a greatly lessened risk.

I believe that a damaged heart is used as an indication for Caesarean more frequently than is absolutely necessary. I have been amazed more than once to see how well a badly damaged heart could accommodate itself to labor in patients who have refused a Caesarean. As an added argument in heart cases it is proposed to sterilize the patient at the same time. I think that this should be disregarded in making a decision to operate. We operate to save mother and child; the future should not be allowed to influence that object. If it is deemed best to sterilize her it can be done at a subsequent laparotomy with far less risk.

Doctor Coffey's contention that premature labor is not induced often enough should be strongly emphasized. The induction of labor several weeks in advance of full term in cases of moderately contracted pelves is preferable to a section at term. The mortality rate should be almost nothing and it is a simpler and safer procedure in the hands of the general practitioner who does the great bulk of the obstetrical work.

Doctor Breitstein's suggestion that it be a hospital requirement to have a consultation before a Caesarean operation is good. Why not also require every operator to report such operations to the monthly staff meeting for discussion, the same as we do with all mortalities?

EDWARD N. EWER, M. D. (251 Moss Avenue, Oakland)—Obstetricians who take pride in the art of their subject will agree that Caesareans are over-much the fashion. This condition came about largely through rather general adoption of the operation for quick delivery in eclampsia. Carl Braun had stated the convulsions usually stopped after delivery. Duhrssen claimed this result in 94 per cent and Ohlshausen in 85 per cent. What more natural than that Caesarean, an easy quick operation, should look attractive when accouchment force and high forceps had become discredited.

Caesarean for eclampsia has accounted for a mortality of 16 per cent in well-equipped maternities in Great Britain, and 32 per cent in the country at large (Fitzgibbon). At the Rotunda, where they do not Caesareanize, the death rate for twenty years under their conservative method of treatment has been only 8 per cent. Equally good results are reported from many sources. In view of these facts, it is high time for Caesarean section as routine treatment for eclampsia during the height of the toxaemia to be frowned upon. Next the operation was seized upon for the solution of almost every obstetric difficulty, and the dire results are shown in Doctor Maxwell's figures.

Distocias, due to faulty rotation, like deep transverse arrest, are too often treated by section. I find with the Kielland forceps their handling from below is usually easy and safe.

I believe, with careful judgment, the indications for Caesarean section may be broadened to include many cases of placenta previa.

The indications in pelvic obstruction as outlined in Doctor Maxwell's paper are sound in every particular, and should be carefully studied and adhered to.

I wish to put in a word for the low Caesarean, which, I believe, has many advantages over the classical variety. If it is safer in the presence of infection, it is to be preferred in all cases, for if 50 per cent of all Caesareans are attended with a febrile puerperium, as is generally stated, the possibility of infection must always be conceded. Furthermore, the dictum "once a Caesarean, always a Caesarean" need not be urged for the low operation. There is no more danger of future rupture than there is after vaginal hysterotomy.

CLASSIFICATION AND RESULTS OF TREATMENT OF HAY-FEVER *

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A study of 190 patients with allergic coryza.

Patients with vaso-motor rhinitis and non-seasonal hay-fever are in most cases sensitive to food or animal emanation proteins.

The intradermal is more reliable than the cutaneous method for testing sensitiveness.

A patient not sufficiently relieved by pre-seasonal treatment should be treated through the season, and the following year the patient should receive an increased amount of pollen extract.

OUR object in presenting this paper is first, to classify the patients referred to the department because of symptoms of hay-fever; second, to give the results of our treatment.

By hay-fever we mean allergic coryza caused by pollens, which indicates a hypersensitive reaction on the part of the patient to pollen protein. Cooke designates by the term "allergic coryza" that symptom complex which arises from a hypersensitiveness of the mucous membrane of the upper respiratory tract and usually of the eye.

Vaso-motor rhinitis, a term commonly used, merely refers to a pathological condition, and when these patients are studied, most are found hypersensitive to proteins. Hansel, in a group of one hundred cases of non-seasonal vaso-motor rhinitis, found approximately half of them to be sensitive to various proteins.

Dunbar, in 1905, was the first to use plant pollen in the treatment of hay-fever. He attempted to pro-

*Presented at the 1924 Annual Meeting of the Utah Medical Association, Salt Lake.

duce an anti-toxin in the horse. Since that time the literature and work on protein sensitization has been most extensive, and has rapidly changed our conception of the etiology of hay-fever and asthma.

The natural result of such rapid advance has been considerable confusion. One of the questions presented is that of anaphylaxis. Is hay-fever an anaphylaxis phenomena? The view advanced by Coca seems most acceptable. The word "anaphylaxis" is reserved by him for those reactions produced in the human, or in the animal, after an artificial hypersensitiveness has been produced; while allergy applies to the reactions occurring in individuals naturally hypersensitive from the absorption of the specific protein. Anaphylaxis is a true antigen-antibody reaction. There is no proof that allergy is of this specific nature. This distinction is fundamental when considered from the standpoint of therapy. In anaphylaxis complete desensitization is always possible and perhaps permanent. In allergy desensitization is only partial, and has not been found to be permanent.

Because of this essential difference, Cooke proposed the word "hyposensitization" to distinguish the lessened sensitiveness induced in allergy from the state of desensitization in anaphylaxis. We have no definite knowledge of what actually takes place in the process of hyposensitization.

We have adopted a classification of coryza, combining those used by Cooke and Walker. This includes coryza of both allergic and non-allergic etiology. This paper does not consider any cases or study of the non-allergic coryza.

The role of calcium metabolism in hay-fever and other allergic conditions is of interest. Pottenger is of the opinion that in asthma particularly there is a calcium deficiency which makes the neuro-cellular mechanism hyperirritable. Novak and Hollander, in their study, conclude "that certain cases of hay-fever and asthma show a low blood calcium, but that calcium therapy alone does not influence these conditions." There is, however, a possibility that calcium thyroid and parathyroid metabolism may be definitely associated with protein sensitization.

We can dismiss the role of bacterial proteins as a cause of hay-fever in our cases, because we had no patients in whom absorption of bacterial proteins was proven to be the cause of the clinical symptoms. Autogenous vaccines were used in some cases with marked benefit, but we do not consider their action as allergic.

METHODS OF DIAGNOSIS AND TREATMENT

Diagnosis—The success or failure in treatment of hay-fever is naturally dependent on proper diagnosis as to causative agent. A careful history is of great assistance, giving as it does much important information as to the age of onset, duration, family history, seasonal character of symptoms, date of onset, etc. Most of the patients were between 20 and 40 years of age, while the duration of symptoms were in the largest percentage of cases from one to twenty years.

It is estimated that 10 per cent of all persons are sensitive to proteins, 1 per cent being sensitive to pollens. Of these, about 40 per cent (in our service 34.7 per cent) gave a history of direct inheritance of allergy. Fifty-two and one-tenth per cent gave a history of other allergic symptoms of asthma, eczema, and urticaria. A careful physical examination is always done. Special care is taken in the examination of the nose and throat, and any obstruction is cared for surgically. Hay-fever per se is not sufficient cause for intranasal surgery.

According to the history and date of onset of symptoms, the patients are grouped. The time of appearance of the predominating fall type of hay-fever is August 15, and it lasts until frost. The spring type lasts from approximately May 30 to July 20. The mixed group had symptoms of hay-fever both spring and fall.

The patients classified as non-seasonal had symptoms of hay-fever, but their time of appearance had no connection with the seasons. The potential group were patients sensitive to pollen, but who had no history of hay-fever. We had no patients with hay-fever due to tree pollen. None of the patients had history of onset of symptoms at time of pollination of trees. The time of hay-fever varies with the locality and time of pollination. Local botanical surveys are important in determining these factors, and the abundance of the various pollens.

Our methods in testing for sensitiveness to foreign proteins are both cutaneous and intradermal. Food and animal emanation proteins are usually applied by the cutaneous methods as follows: An abrasion is made by the Von Pirquet scarifier, and on this area is placed the dry protein extract. A drop of one-tenth normal sodium hydroxide is added, making a solution of the protein. If there are no indications other than a history of seasonal hay-fever, approximately fifteen to twenty cutaneous tests are applied. Where indicated, as in the non-seasonal hay-fever, as many as ninety cutaneous tests have been applied.

The intradermal method is carried out with a tuberculin syringe and a solution of the proteins, 2 minims of a 1-500 solution of the protein being used. It is introduced into the superficial layers of the skin. In male patients these tests are applied on the flexor surface of the forearm; female patients, the anterior aspect of the thigh. We have found that the intradermal method will often give a positive reaction when the cutaneous test is negative. A positive test with either method is indicated by the appearance of an urticarial wheal with pseudopos. In reading our results, we have found that it is impossible to adhere to any fixed rule with regard to the wheal reaction. One individual will give a wheal reaction of 1½ cm. in diameter and with no pseudopos, while another individual, no more liable to develop symptoms from the same group of pollens, will give a 3 cm. wheal reaction with numerous pseudopos.

We have found that it is a valuable criterion to distinguish between the various tests made, and the proteins to which the patients does not react acting as controls. Where numerous tests are applied in a very sensitive individual, considerable reaction may appear both general and local. When this does occur, the prompt administration of adrenalin in amounts up to 2 cc. (intravenous if necessary) will usually prevent any serious consequences; although Lamson has recorded two deaths from the intradermal protein tests.

The pollen, or proteins, to which the patients show the greatest amount of reaction are the ones most apt to give symptoms. Naturally, wind-borne pollens are usually at fault. Nevertheless, patients at times show definite hay-fever reactions to pollens, not wind-borne, from which they come in contact, such as that of dandelion, goldenrod, and rose.

It is important that all pollens to which the patient reacts should be known, as the treatment with one pollen does not protect against another, in spite of the frequent statements to the contrary. As Bernton has shown in such a closely related group as the short and giant ragweeds, treatment with one does not give protection against the other. Of our 130 cases of fall hay-fever, all except one reacted to pollen of the short ragweed. In all but one case, ragweed pollen, either alone or in conjunction with other pollens, was used for treatment of this group.

The spring hay-fever in this vicinity is largely due to timothy, June grass or red-top pollens. The mixed group is a combination of both spring and fall pollens.

METHOD OF TREATMENT

In our treatment of the patients with hay-fever (seasonal allergic coryza) we have depended entirely on hyposensitization with the pollen extract. From the clinical data and sensitization tests the pollens responsible for the patient's hay-fever are determined, and extracts are used for treatment.

We offer nothing particularly new, but suggest simplicity in the treatment of hay-fever patients. Success of treatment can best be judged by clinical results and the patient's eagerness to return for therapy each season. In 1921, twenty-one patients were treated for seasonal hay-fever. Of this number, eleven, or 52 per cent, returned for treatment in 1922 and the same number again in 1923. In 1922, a total of forty patients were treated. Of this number thirty-one, or 77 per cent, returned for treatment in 1923, and most of these patients are again returning for treatment in 1924. When we consider many patients probably left the city and some were referred to their local physician for treatment, the percentage of returned patients is unusually high. There were no "cures." The freedom from hay-fever, as produced by hyposensitization with protein extract, is only temporary. Protein treatment must be resumed each season. It is possible that continued pre-seasonal treatment may develop a partial permanent tolerance for the offending pollen proteins.

To date we have used the acetone insoluble residue of the pollens in making our extracts. This season, 1924, we are using the method described by Coco. It is beyond the purpose of this paper to discuss the various methods of preparation of the extract. However, in order to obtain satisfactory clinical results it is absolutely necessary that one know the strength of the solutions used, graduated to an adopted standard. The nitrogen standard basis, assuming necessary precautions are taken to prevent deterioration of the extract, has many advantages, and more accuracy in dosage is possible.

In the cases reported we attempted to simplify the treatment and conserve the time of the patient by starting treatment with a 1:10,000 dilution of the pollen extract. A 1:100 solution of the pollen extract is prepared by taking 0.1 gram of the acetone insoluble residue in 1 cc. of normal saline to which is added a drop of creosote. From this solution, strengths of 1:500, 1:1000, 1:5000 and 1:10,000 are prepared by addition of the indicated amounts of normal saline.

It has been our experience that it is perfectly safe and reasonable to treat patients with more than one pollen extract, if indicated.

The average initial dose in treatment has been 0.3 of a cubic centimenter of the 1:10,000 pollen extract solution. The dose is increased according to the patient's tolerance. If reactions occur, no increase in the amount of pollen extract is given at the next treatment. Adrenalin given with the pollen extract does not affect the success of the treatment. We have considered no patient sufficiently treated who has not received at least one subcutaneous injection of 0.5 cc. of the 1:100 pollen extract. The average number of injections required to reach this maximum injection was ten. We have no severe general or local reactions. Minor reactions of urticaria, hay-fever, or asthma were controlled by adrenalin.

The fall group of patients being the larger in number, the results can be considered a better average.

The best method of treatment is pre-seasonal, finishing the course of injections at the approximate date of beginning of hay-fever season. If the patient is not fully relieved, the treatment should be continued through the pollen season. Patients who appear for treatment during the season are treated in the same manner, except the dose of pollen extract used is smaller and the increase in amount is less rapid. It is surprising the amount of relief these patients receive from this seasonal treatment. If a patient treated pre-seasonal does not have sufficient relief, we continue the treatment throughout the season.

In regard to the patients classified as potential hay-fever subjects, no treatment was indicated. It is very possible, however, that most of these cases would develop clinical hay-fever if they came in contact with sufficient of the offending pollens. As long as their environment prevents this, and the local resistance in the upper respiratory tract is not lowered, they will probably continue to be free of hay-fever symptoms. The group of patients with symptoms of hay-fever, due to foods and animal emanation, were not treated. Hay-fever of this nature is best illustrated by case histories.

CASE A. F.—Came for relief of frequent head colds and marked sneezing. The spells of sneezing were most frequent and distressing at time of arising in the morning. Sensitization tests were negative to pollens, but were markedly positive to chicken feathers, goose feathers, and dog hair. Removal of contact with feather pillows gave relief. Hyposensitization should be considered if symptoms continue to the point of uncomfortableness.

CASE A. C.—Woman, age 50. Was first seen in the nose and throat department because of a persistent vasomotor rhinitis, with irritating nasal discharge. Protein sensitization tests were entirely negative, except for a characteristic reaction to the intradermal test with whole milk protein. Patient discontinued the use of milk and milk products, with complete relief. These illustrate well

allergic coryza due to proteins of foods or animal emanation.

One of the most interesting cases in the potential group of hay-fever patients was referred because of epilepsy (we have carried out protein sensitization tests on a large number of these patients). This patient was sensitive to ragweed, timothy, several food and animal emanation proteins. In this case patient had an attack of grand mal immediately after the sensitization test. Since removing contact with the positive proteins, however, this patient had only one light attack over a period of two months.

Further case histories are given to illustrate the other groups:

CASE A. M.—Boy, age 15, appeared with hay-fever symptoms of three days' duration, with no previous hay-fever. Protein sensitization tests were negative, except for dandelion. No treatment was given, except instructions to avoid contact with dandelion. No further hay-fever occurred.

CASE J. M.—Male, age 70. Hay-fever of twelve years' duration, sensitive to ragweed and rye. Treatment was completed June 25, a date too early to afford protection against fall hay-fever. Patient returned August 20 with hay-fever.

CASE W. E.—Fifty-five years old. Active pulmonary tuberculosis. Hay-fever of twenty years' duration, sensitive to ragweed and timothy pollen. Had better than 75 per cent relief. There was no aggravation of pulmonary condition, although patient had reaction to one or more treatments, with resulting generalized urticaria.

CASE J. S.—Fall hay-fever, sensitive to ragweed pollens. Came to clinic August 1. Stated he had finished treatment elsewhere this year for fall hay-fever. Gave a marked local reaction with generalized symptoms of hay-fever to an intradermal injection to 0.2 minim of 1:1000 solution of ragweed, which indicated treatment had not been completed.

SUMMARY AND CONCLUSION

1. A study of 190 patients with allergic coryza is presented.

2. The predominating type of hay-fever found in this vicinity is of the fall type, and in practically all cases due to the pollen of the short ragweed.

3. Patients with vaso-motor rhinitis and non-seasonal hay-fever are, in most cases, sensitive to food or animal emanation proteins.

4. Pre-seasonal treatment is the method of choice.

5. The intradermal is more reliable than the cutaneous method for testing sensitiveness. A 1:500 dilution extract was used.

6. Treatment has been with the acetone insoluble extract of the pollens.

7. It is fair to consider from the results obtained with the treatment of these patients that any patient correctly diagnosed as to the offending pollen and fully treated, receiving a maximum injection of 0.5 cc. of a 1:100 dilution of the pollen extract (1/200 gm.) can be assured of relief. In our largest number of cases, the fall hay-fever group, 82 per cent obtained over 75 per cent relief. Of this same group, 46.8 per cent were given over 90 per cent of relief.

A patient not sufficiently relieved by pre-seasonal treatment should be treated through the season, and the following year the patient should receive an increased amount of pollen extract.

SOME FEARS OF ENDOCRINE ORIGIN

By EDWARD HUNTINGTON WILLIAMS, M. D., *Los Angeles*

Whatever the mechanism involved in their production, the goal of what may be termed physical type of fears is the same, namely, the fear of death or bodily injury.

We are still in the stage of modified empiricism—of "scientific guessing," if you please—but a condition that frequently is the forerunner of actual scientific deduction and application.

DISCUSSION *by Harold W. Wright, San Francisco; F. S. Marnell, Stockton; H. Lisser, San Francisco; Clifford A. Wright, Los Angeles.*

IN OUR modern conception of the causes of disease, to speak of "endocrine" fears seems tautological, since fears, like the other emotions, are so intimately dependent upon the ductless glands. Moreover, the single word, "fear," is far too comprehensive a term, except as indicating a general group of conditions. For example, diffidence is undoubtedly a form of fear; so, also, is the sensation one experiences when his auto skids. The bashful boy is distressed and afraid in the presence of a single stranger, and he is afraid in the presence of impending death, as in the case of the skidding auto. But it is difficult to reconcile the idea that the same set of emotion-making anatomical structures are involved in producing these widely divergent sensations. Probably the same set of structures are involved, but all of them cannot be involved to the same degree in each instance.

I think we have very precise evidence of this in certain cases of morbid fears in which the state of the blood pressure is a symptom. We have the high tension, fearful misgivings of certain individuals, and the low-tension, depressed forebodings of another type. Both of these individuals are correctly referred to as fearful and afraid, according to our present conceptions. Indeed, their ultimate mental reactions may be almost identical. Yet it is highly improbable that the mechanisms producing these reactions are the same.

It may be pointed out that, whatever the mechanisms involved in their production, the goal of what may be termed physical type of fears is the same, namely: the fear of death or bodily injury. Such is not the case with the bashful or diffident. Often it is not the case in persons who have a fear of open spaces or closed-in places, or a hundred other morbid fears, which really do not threaten or portend death or bodily pain, and which the afflicted person may recognize as having no such import. And yet these sensations obtrude themselves, even though ruled out by reason. In such cases, it seems to me, a very different gland mechanism is at work from these cases where there is a normal fear of an actual danger. It is almost self-evident. But in most cases of this kind it is not always possible to put our finger on the exact location of the focus of the trouble, although our recent advances in endocrine knowledge is an earnest that presently we shall be.

I have had under observation and treatment for some little time several patients whose symptoms and response to treatment suggest that the cause of their fears is of pituitary origin—or, at least, that they are not the type of fears that one expects from

adrenal origin. Let us consider for a moment the sort of thing an adrenal disturbance stirs up.

We are all familiar with the action of adrenin when injected into the blood, as described by Cannon and others, that is, dilation of the pupils, erection of the hairs, constriction of the blood-vessels, inhibition of the activities of the alimentary canal, and the liberation of sugar from the liver. Also, there is likely to be paleness, trembling, twitching of the lips and gasping for breath, with changes in the blood pressure.

This composite gives us the classical picture, as well as the physical and chemical indications, of fear in which the adrenals are dominantly involved, either as cause or effect. It is the picture of fear as the term is applied ordinarily, an actual fear of definite bodily injury. Perhaps it would be permissible to call it the carnal type of fear, a kind that characterizes the fear in the lower animals and about the only one that such animals ever experience. It is a terror in which the emotion of indefinite worry plays no part: there is actual, tangible danger, not merely an indefinite, imaginary one.

In contrast to this type of fear, which seems caused or accompanied by pretty definite endocrine reactions, is the morbid, indefinite type of worry about, and fear of, some intangible thing, that can be explained away by scientific or common-sense deduction. Yet reason does not dispel it, at least more than temporarily. A little jest in one of the humorous magazines, a short time ago, suggests the type of thing I have in mind. The jest in question is this:

Two girls, sisters, in their early twenties, are strolling along the street. One sister is the phlegmatic type, the other sister thin and nervous, the typical worrying kind. As they walk aimlessly along, the thin sister says, mournfully:

"Oh, dear! I'm just worried to death about something."

The phlegmatic sister, surfeited with these perennial worries, replies somewhat petulantly: "Well, for heaven's sake! What in the world are you worried about *now*?"

The thin sister hesitates a moment, and then replies sheepishly: "Why—er—for the life of me I can't remember."

Now, this case, which is really authentic, although used as magazine copy, portrays a type of worry, or fear, if you please, with which we are all familiar. We see patients repeatedly who experience this vague apprehension, a fear and dread of a mysterious, impending danger, but an emotion so indefinite that they admit readily "there isn't really anything to worry about or be afraid of."

To me, such cases suggest an endocrine disturbance—are really cases of endocrine fears, as I am using the term here—but probably not the kind of fear that can be attributed to adrenal misfunctioning. Frequently, the characteristic adrenal symptoms are lacking, and in addition there are positive symptoms that point rather definitely to disturbances in other glands, such as the pituitary.

I am fully aware, of course, that in referring symptoms to this or that specific endocrine gland action, I am taking liberties with our present knowledge of these glands. However, there are certain clinical symptoms and therapeutic reactions which seem to confirm our present conception of the action of some of these glands; and a certain number of patients receive benefit by treatment based on this conception. We are still in the stage of modified empiricism—of "scientific guessing," if you please—but a condition that frequently is the forerunner of actual scientific deduction and application.

I wish to give briefly the history of a case which, from clinical evidence at least, seems to bear out the idea that her fear symptoms were not those of adrenal disturbance primarily, and whose condition was definitely improved by treatment directed to some of the other endocrine glands. The case is one of a highly intelligent, cultured, and educated woman, now 57 years old. Her family history is negative, except that her mother was a rather timid and nervous type of woman. Her menstrual periods began at thirteen, were rather painful, but otherwise normal. She was of medium size, but well developed. She was always sensitive, rather timid, but not unusually so. Her first break came when she was 18. It was rather a mild depression, with headaches of a boring character in the top and anterior part of the head, which came on suddenly at irregular intervals, continued for a few hours, and stopped rather abruptly. Ordinary remedies did not affect them.

Mentally, she was depressed and somewhat irritable during these attacks, whereas ordinarily she was cheerful and exceptionally placid in her mental attitude. Her chief source of worry at this time was that she would not be able to accomplish certain things, some of them trivial in character, such as getting her dresses ready for a journey, or even doing the necessary shopping to get the dresses. This condition persisted for about three months, gradually disappearing, finally leaving her in a somewhat exalted state.

Following this first attack she had repetitions at intervals of not more than two years, each attack lasting from three to six months. All were very similar to the first one, although later in life they became more severe in character. In none of them, however, was she actually insane or obliged to be confined for treatment.

She married at twenty-five, and although her marriage was a happy one, and she naturally being very affectionate, she was frigid sexually. She became pregnant three years later, and her only child, a girl, is a robustly normal and delightful woman. Her husband is the stable, affectionately devoted type that must inevitably influence for the better any morbid condition of the purely mental type—that is, if there really is any such thing.

Yet none of these things—her married life, pregnancy, or menopause, which began at forty-five and was completed without apparent change or discomfort—seemed to influence her attacks of apprehensive and delusional depression. There was this modification when she was about thirty-five, however, namely: an increase in the severity of her headaches. Frequently, the headaches would waken her at night and last for several hours. At about this time there

was an increased tendency to hairy growth on the upper lip and chin. She was always myopic, but without astigmatism, and she wore properly adjusted glasses.

Between the age of fifty and fifty-three she had six attacks, lasting an average of five months each, the attacks coming on very gradually. In one of these, the second before the last, and the first in which I ever attended her, the delusional character of her fears bordered very closely on actual insanity. Thus, she heard workmen in the basement, was fearful that they were making preparations to harm her, and found great difficulty in reasoning this idea out of her mind. Also, in her last three attacks she developed an abnormal fear of death—an emotion entirely at variance with her normal attitude.

In addition to her peculiar and abnormal fears, there were certain and pretty constant symptoms that suggested pituitary, thyroid, and perhaps ovarian disturbance, rather than much disturbance of the adrenals. At least this was the impression of Clifford Wright, after considering these symptoms. Thus, there was an easy fatigability, such as we see often in asthenic cases with low blood pressure; yet her blood pressure was always normal, from 140 to 145 systolic. She lacked the power of sustained effort, particularly during the attacks. The masculine type of hair on the face in this otherwise delicate and effeminate woman, and sexual frigidity, suggests sex gland disturbance with pituitary trouble. And, also, the boring, explosive type of headache not dependent upon any gastro-intestinal condition or eyestrain, was a hint that the difficulty might be pituitary.

In this connection the nature of her obsessions—her fears—suggested pituitary trouble of a chronic nature, if the theory is correct that misfits between the gland and its fossa result in "compulsions, obsessions, and lack of inhibition." And, anyhow, we had presented a case that gave at least a strongly suggestive picture of fears of endocrine origin. Moreover, since no other forms of treatment had proved of any particular benefit heretofore, it seemed worth while trying the experiment of attempting treatment along the lines suggested by the possible endocrine involvement. She was, therefore, given a combination of ovarian substance and thyroid by mouth, and antuitrin hypodermically.

This treatment was started just at the time that one of her attacks seemed imminent. She was showing the mental symptoms that heretofore had never failed to herald an attack, particularly the fear about her wearing apparel, which in her case was pathognomonic. She was also having the characteristic headaches daily, but at irregular intervals.

Within a week after treatment was started, her headaches had become less frequent and much less severe. She was less depressed and much less fearful. And before the end of the first month it was evident that the attack had been aborted—or, at least, she had no headaches, none of the characteristic fears, and less fatigability—was, in fact, in a normal state of health physically and mentally. A week before that time the ovarian and thyroid treatment had been stopped, but the antuitrin was continued for two more weeks, a total of six weeks.

It has now been three years since she has had a fully developed attack, by far the longest period she has ever had since her first girlhood experience. During these three years, however, she has had four periods when there was a return of the headaches and the fears, but which were dispelled almost at once by a modification of the first treatment. In these later attacks the antuitrin was pushed to a greater extent, since that seemed to act almost as a specific in controlling the headaches.

Now, I am fully aware that one case does not prove anything to any degree of certainty—the woman was approaching an age when her attacks were likely to cease anyhow. But I have observed closely similar symptoms in younger persons that also responded to this type of treatment. More important for our purpose here, however, is the fact that the fear symptoms of these cases seemed to be definitely of endocrine origin, not purely "psychic," as had been diagnosed repeatedly.

Here is another case, seen in consultation with Dr. Ernest Bryant Hoag, of quite a different general character, but in which, as in the one just cited, the dominant mental symptom was a morbid fear. This case is a young man, now twenty-three years old. He is six feet three inches tall, rather slender, but well proportioned. Until his fifteenth year he was an unusually bright and active boy and of average size for his age. Beginning with that year, however, and without any discoverable cause, he grew seven inches in eight months, and has grown very little since then. His most rapid growth during that period was one inch in three weeks. Toward the close of this period he had several fainting spells, and many other attacks of protracted weakness. His mother reports that at that time his physicians put the patient to bed for four months on account of some heart difficulty, probably myocarditis with enlargement.

His heart is normal at present, systolic blood pressure between 118 and 124, pulse rate between 90 and 100. He attempted school after recovering from his heart difficulty and, although bright in his studies, he became exhausted so easily and so profoundly that he had to give up attendance, but continued his studies at home. He has very great mechanical ingenuity, is an omnivorous reader of good literature of all kinds, and is industrious most of the time.

His muscular tone appears good; but he has periods of great weakness, which is about his only abnormal physical symptom. His chief complaint is an all-defined fear that something will happen to him if he leaves the house or goes out into crowds, as on the streets. The very thought of going out on the street brings on this weakness.

By this time I feel sure that every physician here has drawn a perfectly characteristic mental picture of this boy—the psychoneurasthenic type that any trained observer can diagnose almost at sight, and whose personality is rated by neighbors and friends somewhere between "queer fish" to "plain crazy." But here is the surprising thing: This boy is not insane, not erratic, not even "queer." He appears, talks, and acts in a perfectly normal manner, although physically he seems to have the weakness of a person convalescing from a recent illness.

As to his morbid fears, he recognizes fully that they are purely imaginary—knows that there is nothing really for him to fear. And it is not timidity in the sense of diffidence, as he mingles and talks with the guests at his home. Yet this dread of the indefinable something, which he realizes does not actually exist, is such that he cannot overcome it to the extent of venturing far from his home.

It seems to me, therefore, considering the history of this case, that there is an endocrine basis for this young man's emotional state, which, for want of a better term, we call "fear." He is under treatment at present along the lines suggested by this conception, but sufficient time has not elapsed as yet to draw any definite conclusions.

Let me say, as a closing word, that I realize fully the inadequacy and dearth of really scientific data in considering my present subject. I surely do not intend to convey the impression that there is anything final or conclusive presented here, but rather some desultory observations about an interesting subject that I hope may incite enlightening discussion.

Pacific Mutual Building.

DISCUSSION

HAROLD W. WRIGHT, M. D. (Flood Building, San Francisco)—The two cases reported by Doctor Williams are of considerable interest and arouse speculations which could lead to nothing but difference of opinion. But these two case reports do not seem to be at all convincing on the side of the author's thesis. The relation between fear and certain rather vague endocrinopathic physical signs and symptoms is not very clear in either of the reports. In the first case, particularly, one is struck with familiar psychological signposts of an early acquired phychoneurosis which in its more acute phases bordered on a manic depressive psychosis and one cannot read this report without wondering how much more might have been learned by a more complete life history of the patient; certainly her fears were specific enough to be interpreted as symbolic of some definite mental complex. In some of the more modern psychiatric hospitals where there is enthusiasm for clinical research from every point of view many cases of apparently unwarrantable fears, as well as other psychotic symptoms, have been satisfactorily explained after the recovery of the patient on purely psychological grounds and have been shown to be due to an attempt by the patient to overcome or get around difficulties in personal adaptations to the environment, the psychosis being a way out of such. For example see Strecher's report of twenty recovered patients in the American Journal of Psychiatry for April, 1924.

In the second case reported by Williams attention is called to the fact that the fear of going out on the street succeeded a period in which the patient had had fainting attacks which were said to be due to an actual cardiac deficiency. May the subsequent fear not have been more likely due to suggestion instilled at that time?

As to the relation of emotions, such as fear to glandular activities, much work has been done by Crile, Cannon and others and their reports tend to confirm the belief that glandular dysfunctions are the result of fear and not vice versa. While it is true that we see emotional effects in one direction or the other in cases of hyperthyroidism or myxoedema, in hypo-pituitarism also, it is also true that we see many patients with such glandular disorders who are not emotionally affected thereby to any unusual degree. *In any neuropsychiatric disturbance there may exist several coincidental conditions and we need to be ever mindful of giving every factor consideration, but at the same time careful to estimate the personality as a whole.*

F. S. MARNELL, M. D. (Stockton State Hospital, Stockton)—The two interesting cases presented by Doctor Williams are of a nature to arouse considerable discussion. Both appear to be of the neurotic type of mental leaners, who always find some excuse to develop their psychotic tendency. Freud explains them one way; Cotton gave them a physical base, now the trend is toward gland defects. *My experience with gland therapy leads me to believe, except in a few well recognized types, that the mind controls the glands more than the glands control the mind.* Most types of neurosis react well to any method of treatment that builds them up physicially and leads their minds away from themselves. The woman acts like a neurotic of the self-protective class, who, when relieved of her menstrual and sexual stress by the menopause, reacted to the necessary mental suggestion accompanying her treatment. I believe the doctor gives too much credit to the medicine and not enough to his skillful handling of her mental processes.

The young man has a definite phobia with an explainable cause: The fear developed during his heart trouble led to a fear of being away from home and those who might secure aid for him in another attack.

In trying to explain the mechanism of the milder type of mental disturbance we are more inclined to look for something mysterious, than to give sufficient value to our ability to help the patient to reason correctly. A placebo is a wonderful remedy if we believe in it and transfer that belief to the patient.

H. LISSER, M. D. (Fitzhugh Building, San Francisco)—Whether one is inclined to agree or disagree with Doctor Williams' theory of the endocrine origin of fears, I gladly admit a genuine pleasure from the perusal of his paper. Not all of us possess a similar gift for expressing strange and novel thoughts in as pleasing and graceful a manner. Moreover he has disarmed some of the criticism that is the invariable lot of the pioneer, by modestly and frankly admitting that adequate scientific proof of his contention is not yet available, nor probably will be for a considerable time, if ever. However, it would seem to me unwise to dismiss his theory abruptly, quite as much so as it would be to gulp it down eagerly. In other words, the attitude of Mendel appeals to me—that of "the prepared open mind," which, in the present state of our knowledge, forbids either the rejection or acceptance of the author's theory. *A cynical intolerance is no more constructive than an ignorant credulity, and we have had too much of both in endocrinology.*

For my part, I confess to finding Doctor Williams' ideas rather intriguing, perhaps because I could duplicate his experiences many times, but have never dared to present them formally, perhaps for fear of ridicule. The rather magical relief of emotional disturbances coincidentally with the improvement of an endocrine disorder makes the conclusion somewhat tempting that the one is related to the other. It is, indeed, a difficult matter to prove, except in outspoken cases. No one will contest that the melancholia, emotional lethargy and mental torpor associated with myxedema may be relieved by thyroid extract, and that the emotional agitation, phobias and even mania of exopthalmic goiter may disappear through Lugol's solution and thyroidectomy. But the milder forms of ductless gland disease are not readily diagnosed with assurance and the same uncertainty applies to some of the disturbances in the realm of psychiatry. At least Doctor Williams' approach to their solution is more pleasing than some of the psychiatric dissections that expose an emotional interior as revolting as some of the findings at autopsy.

CLIFFORD A. WRIGHT, M. D. (2417 South Hope Street, Los Angeles)—This paper of Doctor Williams, as well as several others he has written on this subject, are of special interest to me, for I have had the opportunity of seeing some of his patients. He has been one of the first to attach due importance to the definite relationship between neuro-psychiatry and the study of the endocrines. His deductions are surely no less plausible than many we are expected to believe in regard to mental complexes, personal adaptations, etc.

The ground has been pretty thoroughly covered, but to reiterate—we are all well acquainted with certain fears and other nervous phenomena in some of the endocrine types of individuals. Like Doctor Lisser, we have not reported some of these cases, "perhaps for fear of ridicule." We have all observed the morbid, depressed, mental reactions of the hypothyroid and the excitable, even manic, state of mind of many patients with

exophthalmic goiter, and recognize them when we see them. No less certain, however, are many of the mental reactions that we see in pituitary types, and one of the most frequent conditions at the menopause is depression with uncertain phobias or fears. In some of these cases the disappearance of nervous phenomena can only be accounted for by the administration of glandular products—and it is no more unusual to see these patients greatly benefited than it is to see other normal reactions, such as we see in the effeminate boy with Froelich's syndrome—who will not take his own part and who does not have the proper attitude toward his fellow students—completely changed by the proper pituitary therapy. One case which I had under treatment—a married woman—would always (about ten days after her period) be wakened out of a sound sleep at night with a terrible spell of fear; she would rise from her bed and rush from her room into the open, temporarily losing control of herself. This was diagnosed under the head of so-called "Epileptic Equivalent," and while not relieved by the use of luminal, was relieved by luminal and ovarian products.

Briefly, I might call attention to three patients—two pituitary and one a combination of thyroid and gonad insufficiency. One of the pituitary patients was afraid that he was going insane and had carefully studied the matter out. Another had indefinite fears, being afraid to ride in a street car, or an elevator, or being where there were crowds of people. Both of these patients were relieved by treatment. The other, a successful wholesale man, was afraid to drive his car alone; to play golf. He would frequently go to the door of a prospective customer and be compelled to turn around and leave. He had dry skin, poor nails, constipation, and other symptoms of hypothyroidism and a definite history of loss of sexual activity.

It seems that this, and other works by Doctor Williams, are steps in the right direction.

LIPIODOL IN THE DIAGNOSIS OF CHEST DISEASE

By Howard E. Ruggles, M. D., and Lloyd Bryan, M. D., *San Francisco*

Discussion *by Clain F. Gelston, San Francisco, and Harold Brunn, San Francisco.*

THE value of lipiodol in the diagnosis of inflammatory processes in the lung was first demonstrated by Sergent and Cottenot. They found that intratracheal injections of this fluid were harmless and gave beautiful casts of the bronchial tree. Other workers have extended the application of this procedure to a variety of chest conditions in adults and children.

There are two methods of injection. In one, a large curved trocar is introduced through the cricothyroid membrane under local anesthesia and the oil injected through it into the trachea. The second consists of cocainization of the larynx and the introduction of the solution into the trachea under direct observation. In our experience, the latter is the more satisfactory method. It is quickly accomplished, can be done in the office, the average patient is perfectly comfortable, there is little tendency to cough and the material is easily retained for a length of time, permitting adequate observation in several positions. In one instance, the introduction of 30 cc. of the oil was watched under the fluoroscope. With the patient upright, the bronchi of both lower lobes were completely filled before coughing began, and afterward he was watched in prone, supine and lateral positions, in an effort to outline a possible cavity in an upper lobe, without discomfort or marked cough reflex.

Laryngologists prefer to inject patients in the upright position, with the result that only the lower bronchi are visualized. The material is heavy, as it consists of 40 per cent iodine in a vegetable oil and so drops directly into the most dependent portions of the lung. Most bronchiectatic cavities and bronchial dilatations occur at the bases and are, therefore, easily outlined. Lesions in the upper lobes are filled with difficulty. If possible the patient should be so placed that the suspected area is below the level of the trachea and the injection made slowly in this position. When only small amounts of the oil are used (under 30 cc.) in a single, continuous injection, one portion of a lobe may receive it all and when once placed it does not tend to spread throughout adjacent areas, but is gradually coughed up through the bronchi. Multiple injections and the use of larger quantities tend to equalize its distribution. Thirty to forty cubic centimeters are necessary for adequate visualization in adults. It is a good plan to turn the patient from side to side, and stand him upon his head over a chair or bed in an effort to drain the lesion before attempting to fill it.

In the normal individual the fluid gives a thin coating to the larger bronchi, and in filling the smaller ones produces a diffuse, flocculent shadow which is characteristic. Dilated bronchi are obvious, and the multiple grape-like masses in small bronchiectatic cavities are easily recognized. This is particularly valuable in lesions of the left base behind the heart and diaphragm, which are rarely seen in routine chest films.

The iodine remains in the cavities for long periods. Considerable amounts have been observed several months after injection, and it is still a matter of earnest discussion as to how much direct therapeutic effect may result from this iodization. No untoward effects have been noted following any of the injections. It might be supposed that persons susceptible to iodine would develop reactions to the considerable amounts some of them swallow in the process of clearing their bronchial tracts, but so far none have been reported.

The supply of the oil has been exhausted, due to a government ban upon its importation, apparently upon the ground that it is misbranded. Further work will depend upon renewed importations or the development of a similar product by an American firm.

Although Sergent warns against the injection of tuberculous patients because of the chance of producing congestion and reactions, it would seem that careful trials of the method in selected cases might lead to the perfection of a technic which would be safe and perhaps of value in diagnosis and therapy.

135 Stockton street.

DISCUSSION

Clain F. Gelston, M. D. (380 Post Street, San Francisco)—I have naturally been much interested in the use of iodinized oil in investigating the bronchial tree in children since my work with Armand-Delille in Paris, who had applied the methods of Sergent and Cottenot. The opportunities offered seem to me not to be confined entirely to those cases of gross pathology, although, naturally, these are the most spectacular, and, of course, of

a great deal of value from the standpoint of lung surgery.

Should it ever be possible, however, to procure the necessary subjects, a most valuable contribution would be given to the study of the bronchial tree in the low grade chronic respiratory infections of both children and adults. In many cases these are, unquestionably, to my mind, accompanied by a certain degree of bronchiectasis, probably of the cylindrical variety. Should this investigation be possible, the work of Tallermann of St. Louis on the etiological relationship of lung fibrosis to bronchiectasis would be proven.

In the hands of the French observers, the route through the crico-thyroid membrane was found more feasible in children than the transglottic.

We are all pleased to learn recently that a substitute for lipiodol, and one equally satisfactory, is now on the market, so that these extremely important investigatory methods need not be given up.

HAROLD BRUNN, M.D. (384 Post Street, San Francisco)—I have been very much interested in the use of lipiodol in chest conditions from the time that Doctor Gelston returned from Europe with this method from the clinic of Armand-Delille.

As soon as we could obtain the lipiodol we immediately began using it in our chest cases for diagnostic purposes. At first we used the cannula method. This method is done as follows: A point over the crico-thyroid membrane is chosen and cocainized with 1 per cent novocain. A small curved cannula made for the purpose is passed through the crico-thyroid membrane into the trachea. This can be done quite painlessly. The trocar is then removed and about 5 cc. of 1 per cent of novocain is slowly injected into the trachea in order to counteract irritation. Following this, the lipiodol, warmed so that it will run more freely, is very slowly injected into the trachea.

It is well to lay the patient on the side which it is desired to inject, although both sides can be done at the same sitting very frequently. We soon found that at first we used too small an amount of lipiodol, and latterly it has been our habit to use about 10 cc. first, then to wheel the patient into the x-ray room, having everything ready to take a picture, and inject 20 cc. more, taking the picture immediately thereafter before the patient begins to cough. Some patients are much more easily controlled in this than others. In some it is quite difficult to prevent coughing at the crucial moment. This usually spreads the lipiodol as a flocculi throughout the bronchi.

Lately, through the assistance of Herbert Cohn at the San Francisco Hospital and Carson Martin at the University of California Hospital, we have been able to get wonderful pictures by having the substance dropped through the larynx after complete cocainization. We have found the greatest use of the method in our work in the diagnosis of bronchiectasis.

Before the injection it is well to have the patient empty his lungs by turning him upside down. The same holds good of lung abscesses but these are seldom visualized with the lipiodol. For some reason it seems quite difficult to get the lipiodol to enter a lung abscess cavity. We have had several cases of bronchiectasis on the left side in which the x-ray, before injection, appeared quite normal, but which came out very beautifully after the injection, showing fingerlike cavities behind the heart. In none of the cases that we have used it has there been any symptoms of iodism or any untoward result. In one of my cases in which I performed a lobectomy of the lower lobe for bronchectasis the lipiodol still remains in the other part of the lung, now a period of six months.

I consider the method practically harmless and a great help in the diagnosis of certain lung conditions.

Students Work for Education—Of the 10,000 students who are in attendance at the University of California this year, 7500 must aid themselves financially by securing work of some sort, according to Mrs. Leslie W. Ganyard, manager of the Alumni Bureau of Occupations, who says her organization expects to be called upon by 1500 or 2000 of these students for assistance in securing work to defray at least a part of their college expenses.

THE RELATIONSHIP OF METABOLIC TOXINS TO DERMATOSES

By O. V. SCHROETER, M. D., *Los Angeles*

As dermatologists, we have seemed to be much more concerned with skin pictures, with variations of skin pictures and with dermatologic symptomatology and pathology, than with the mysterious perpetrators of cutaneous injury.

We must seek out the site of toxin formation, the conditions under which toxins are formed, their intimate character, and their effect at the site of deposition.

There is a mutual interdependence of microbic nutrition and potential microbic action. The food of the host is an important factor both in controlling the kinds of bacteria that multiply in the intestinal canal and in determining the nature of the products these bacteria form while they are resident therein.

DISCUSSION *by Samuel Ayres, Los Angeles; Anstruther Davidson, Los Angeles; Harry E. Alderson, San Francisco.*

IN A RECENT paper I sketched skeletally the pathology of toxic dermatoses. I endeavored to show therein that there are different degrees of toxic action which are expressed in different degrees of pathology on the skin surface, that this toxic action finds its expression through the capillaries, and I indicated that the etiology of this condition was toxin carried in the blood stream.

It has been my effort here to seek what light we now have on the metabolic origin of these toxins, their character, their insignificance or importance with relation to the causation of the urticarias, erythemas, and purpuras. It is surprising that so little has been done in the way of clinical research into the etiology of these diseases of the skin. As dermatologists, we have seemed to be much more concerned with skin pictures, with variations of skin pictures, and with dermatologic symptomatology and pathology rather than with the mysterious perpetrators of cutaneous injury.

The study of such a problem concerns branches of the broad field of medicine rather foreign to dermatology itself. We must seek out the site of toxin formation, the conditions under which toxins are formed, their intimate character, and their effect at the site of deposition. In all this we have isolated facts, and we have hypotheses; from them we must gather such knowledge as we can, with a view to a better understanding and care of the toxic dermatoses.

Of course, I am here assuming only the area of metabolic activity in the etiology. I feel sure my assumption is well founded. The first and most logical place of introduction of intracorporeal toxins is the alimentary tract, and years before the day of bacteriology proper, scientists studied the question of alimentary toxemia. Outstanding among these is Bouchard, who made numerous experiments, in an endeavor to accurately incriminate secretions and excretions and faulty metabolism in the production of certain symptom complexes. He might be aptly called the "father of auto-intoxication." Conditions in the bowel are admittedly favorable for the production of decomposition products and for the production of pathological biological chemic substances. We might conceive the production of these to be based on faulty digestion of foods or upon the action of certain elements of the intestinal flora upon

foods; the latter outweighs the former greatly from a pathological point of view. As we study the various phases of these processes of enteric bacterial life and faulty metabolism, certain definite biological and chemical facts emerge.

Arthur Kendall has studied the biochemistry of the microbes themselves. It is analogous to that of living matter anywhere. Protein is the substance to which all else is added in life and upon and within which the vital story of life plays itself. Nucleoproteins are chemically prominent in the bacterial substance. The specific protein of all living things is a multitudinous combination of amino acids, of which some twenty are now known. These are acids in which one H atom is replaced by the radical NH_2. With the exception of nitrogen-fixing microbes and nitrifying organisms, the bacteria of the bowel (as elsewhere) require, or utilize more readily, amino N for their structural needs. Nitrogen must be present for their biologic requirements; N, in fact, is the very cornerstone of life. A series of H condensations in which amino acids or complexes thereof, together with carbon, hydrogen, oxygen, and inorganic salts are woven into protoplasm. From this living material must the toxins of organic life be produced. For microbic catabolism, there are two great energy-containing substances available in the food of the host—carbohydrates and proteids. There is oxidizable C contained in each, but the substances resulting from the intracellular vital combustion of this carbon may be widely different. The same organism may produce harmful or harmless substances as it uses the carbon of carbohydrate or of proteid (peptone). Again, different bacteria produce different toxins on the same media; for instance, the diphtheria bacillus on peptone and meat extractives forms the diphtheria toxin, and the bacillus coli produces indol thereon. If ordinary glucose is added to the media before inoculation, the diphtheria bacillus produces lactic acid and not the toxin and in place of the indol, the colon bacillus produces acidic products, mostly lactic acid. This without any structural change in the microbes.

There is a mutual interdependence of microbic nutrition and potential microbic action. The food of the host is an important factor both in controlling the kinds of bacteria that multiply in the intestinal canal and in determining the nature of the products these bacteria form while they are resident therein. Undesirable microbic activity may be of at least two types:

1. Causing harmful protein derivatives, as in putrefaction.

2. Causing irritant acidic substances, as in fermentation, such as butyric, lactic and acetic acids in unusual quantities. As to the difference in putrefaction and fermentation, we will leave this matter as irrelevant here.

Thus, as curative measures, dietary regulation and the deliberate introduction of bacteria inimical to the growth of harmful types have been introduced.

The study of the chemistry of bacterial metabolism—true of cellular metabolism in general—is in its formative state; it must await the development of new chemical methods. Complete analyses of protein materials always leave a very wide margin of unknown amino acids.

We have considered the products of the growth of intestinal bacteria in a general way. Before taking up the next step, the ingesta, as a source of toxin, bound up with this bacterial growth, permit a few words with reference to the bile. My experience would give decided importance to the deleterious effects on the skin of bile retention. I vividly recall an elderly patient who came with a cutaneous disturbance, much resembling a chronic scabies—skin scars were very numerous from seven years of scratching, and the skin showed many papules and scratch-marks. About the time I had uncovered the hepatic area as guilty, the patient took to her bed with acute cholecystitis, whereupon the skin cleared as if by magic and the itching ceased. Pruritus is, often enough, the only manifestation of a low-grade toxemia, transitory or persistent. Bouchard showed that bile itself is about six times as toxic as urine, but that, while at first the cholate salts were suspected, it was found that the biliary coloring matter was the important toxic agent and that the intoxication arose from the setting free of toxic substances which entered into the composition of the cellular elements. It should not be forgotten, however, that we have also a deficient splitting of the fats due to absence of bile in the duodenum. This causes an intensification, it has been supposed, of the putrefaction in the large bowel, and even already in the small intestine. Pancreatic juice has been shown by Müller to have little effect on the digestion and absorption of fats. What is really important, however, in this bile deficiency is the fact that the fats, not being properly split, digested, expose the bowel to the effect and the system thus, to the absorption of acrid butyric and other fatty acids. And it has been contended by good authority that it is this, and not putrefaction proper, that particularly gives the offensive odor to the stools in such cases.

The intestinal secretion is an alkaline liquid which has a fermentative effect on carbohydrates and aids the pancreatic secretion in converting starches into sugar. Disaccharides are converted into absorbable monosaccharids. It has been shown by experiment that digestion can be carried on in the bowel in the absence of most of all of the secretions and bile. Bacteria supply the deficiency. The direct products of abnormal carbohydrate fermentation are acetic, formic, propionic, butyric, valerianic, lactic, and succinic acids. The presence of such or their products in the blood conconceivably act as irritant capillary poisons.

It is, however, the proteids that play the important role in the metabolic toxemia of the toxic dermatoses. The small intestine, and particularly the large intestine, are capable of passing the products of putrefaction into the blood. There has been much controversy, however, since the day of Bouchard as to how harmful these may be and as to what disposition is actually made of them by the tissues, As stated, in considering bacillary metabolism, so, of course, is it true that the amino acids are the integral feature of proteid food as of protoplasmic chemistry. The waste products produced by the combustion of the proteids are much more difficult to dispose of than those of the sugars,

starches, and fats. And we are now particularly concerned with the metabolic protein toxin, whether of bacillary or digestive origin and its effect, than any classification of its method of production. Perverted nutrition may conceivably lead to the development of new substances which may be toxic. Bouchard, in 1882, showed the presence in feces of the alkaloids of putrefaction, and Brieger, in 1883, showed that such alkaloids may be formed during the act of peptonization. It has been shown that an aqueous extract of putrid matter is very toxic, and that of fecal matter slightly so; the alcoholic extract of putrid matter, however, is not very toxic, but that of fecal matter is decidedly so. The amins are formed from ammonia by replacing H with an alcohol radicle, which might explain the toxicity of alcoholic fecal extract. Since Bouchard, many experiments have been done in an endeavor to clarify the question of auto-intoxication. While putrefaction plays a part in the toxicity of feces, it is less than often supposed. We can conceive it as an indisputable fact that certain toxins can be and are developed in the intestinal tract, that they are a result of fermentative and putrefactive processes on carbohydrates and proteins, and that, from a toxic standpoint, the latter are the most important. What these toxins are, we have indicated. Since the products skatol and indol have been proven of questionable importance in auto-intoxication, renewed interest has followed the demonstration that certain of the amino acids derived from the breaking down of proteins are able to furnish exceedingly toxic amins by the removal of one CO_2 complex. In this way, from tyrosin, a crystallizable amino acid, there is produced tyramin; from tryptophan, indolethylamin and from histidin, a decomposition product of the protamin of sturgeon testes, histamin, the latter all very poisonous. The chronic injection of these has been shown by Harvey to produce serious symptoms. Some of these products have been formed by the activity of bacteria derived from the feces, and some have been found under special circumstances in the intestines.

Facing, then, the question of metabolic toxemia squarely, conceding here and denying there the result of experiment or clinical incrimination of certain discoverable entities, and admitting a certain proven, or, as yet undeniable residue, these complex products, the first-born of a new and more wonderful chemistry admittedly, then, swept into the vital circulation, what is the last link in the chain of phenomena that inscribes on the skin the wheal of urticaria, the rosy patch of toxic erythema, the varied picture of eryth. multiforme or the alarming extravasations of the purpuras?

I have reiteratingly mentioned the capillary as the end-station of toxemia and the basis of dermic pathology of this type. H. H. Dale of London, in an admirable article, states that the capillaries, with their intimate relation to and constant chemical interchange with the tissues, must be especially exposed to any influence on the vascular tonus which the products of metabolism may exert. CO_2, credited with a potent vaso-dilator action, has not been demonstrated to have a pronounced effect on capillary tonus. Taking histamin, a poisonous product of protein decomposition just mentioned, Dale has shown that it has a potent toxic action on the capillary in very great dilution, causing loss of tonus and exudation. He has further shown that this toxic effect on the capillary has been nullified or much mitigated if the animal is previously given an injection of adrenalin. In short, it has been found that histamin, by experiment too, and adrenalin are antagonistic to each other. Pituitrin had a similar action.

So here again we are dragged back to the glorious contemplation of the combat and defense between the poison of organic life and the forces of the living organism contained in the blood. Is it not a fair conclusion, then, when we see adrenalin, the vital extract of a living organ, injected into the circulation, nullifying the effect of a poison derived from the decomposition of organic vital matter, is it not, I say, a fair conclusion to maintain that an overdose of a proteid amino acid or amin in the circulation, or the want of proper hormone in the circulating cases, permits the phenomena of the toxic dermatoses by allowing the effect of such a toxin on the capillary wall? And is it not a further fair conclusion that our treatment of these cases should be in the administration of proper dosage of these hormones as well as in combating the source of the condition in the body? The logic of this is already strikingly shown in the beneficial effect of adrenalin in cases of urticaria.

Plain muscle contraction and loss of capillary tonus occurs as the central feature in the action of a large class of protein poisons. These poisons must have their usual origin in the alimentary tract. In addition, there are possible acidic, irritative poisons, the product of fermentation. The effect of the protein poisons has been shown to be effectively combated by certain hormones, particularly adrenalin and pituitrin, which are derived from glands of internal secretion and, therefore, normally supplied the circulation in health. Insufficient amount of hormone, or overdose of protein or acidic toxin not destroyed by the beneficent action of the liver, results in the deposition of the toxin in the cutaneous termini of the circulation, the capillaries, producing the lesions of the toxic dermatoses.

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DISCUSSION

SAMUEL AYRES, JR., M. D. (Westlake Professional Building, Los Angeles)—Doctor Schroeter deserves credit for directing the attention of dermatologists to some of the recent contributions of biochemistry. Of course, we all know perfectly well that we should keep our minds focused on the etiological factors of skin disorders, but it is so easy to settle down into the false security of complicated nomenclature and to feel that we have performed our full duty when we have made a careful diagnosis.

Pronouncing a diagnosis on any one of the numerous members of the toxic dermatosis group is only the most elementary step in handling the individual patient. The cause, even though often undeterminable, should be searched for diligently and every new advance in biochemistry or internal medicine which has any bearing on the subject should be enlisted. Modern medicine no longer tolerates the mere treating of symptoms and most of the toxic dermatoses are nothing but cutaneous symptoms. Symptoms must be relieved as an incidental procedure, but the main attack should be aimed at the underlying derangement, to restore normal function and to prevent recurrences.

A recent valuable contribution which Schroeter did

not mention was the work of Alvarez and confirmed by Donaldson, who showed that all the symptoms of autointoxication, such as headache, delayed reaction time to touch, sight and hearing, increased basal metabolism, increased blood sugar, increased neuromuscular fatigue, elevated blood pressure, may all be produced by mechanical distention of the lower bowel, entirely independently of toxic absorption. Packing the rectum with cotton pledgets in a group of individuals experimentally substantiated the hypothesis. This does not prove that the absorption of the toxic products of putrefaction or fermentation may not also lead to derangements of function. Presumably the distention of the bowel operates through the involuntary nervous system in producing its effects.

ANSTRUTHER DAVIDSON, M. D. (419 South Alvarado Street, Los Angeles)—The author's desire to elucidate the influence of metablic disturbances on the skin is rather timely, as the tendency at present is to ascribe the majority of the cases of dermatitis to local or extraneous causes.

Doctor Schroeter has, I think, unduly stressed protein poison as a causative factor. While affections like urticaria are the local expression of an acute anaphylaxis as T. B. and syphilis are examples of chronic anaphylaxis due to a protein poison, many of the affections such as eczema and acne are probably chemical, rather than protein in origin. The rash that follows acetanilid and other chemicals is caused by the chemical forming with the colloids insoluble products. In eczema and acne the chemical products resulting from errors in carbohydrate metabolism are probably the chief factors.

There is not at present sufficient evidence to convict the bacteria of the intestines of playing an important part in the causation of skin diseases. The presence or absence of certain forms is so manifestly dependent on "soil conditions" that their influence can only be of secondary importance.

HARRY E. ALDERSON, M. D. (240 Stockton Street, San Francisco)—From a purely clinical standpoint it has been recognized for years that various dermatoses, particularly those mentioned by Schroeter, are due to so-called toxins. These diseases have been treated more or less empirically, but with the idea of eliminating those mysterious toxins, with considerable success. Biological chemistry is now clarifying the situation and placing therapy in many of these troubles on a more scientific basis.

The relationship of impaired liver functions to cutaneous disturbances has been recognized for years. Intense itching, associated with even very slight icterus, is a common occurrence. Similar phenomena in connection with abdominal malignancy are likewise well known. We appear to be on the threshold of discoveries that may explain more definitely the mechanism or some of these processes. As Schroeter states, there are many chemical products resulting from the breaking down of foods or bacteria which are capable of producing cutaneous symptoms. These symptoms may be manifested in the form of a frank eruption, or the skin may show increased vulnerability. There occur alleged "occupational dermatoses" which are due principally to these causes. Altered functions of various internal organs may be responsible for the breaking down of proteins and formation of toxins. Disturbed thyroid activities, and functional disturbances of other ductless glands in many cases constitute the main etiological factors. And so it may be said that the dermatologist, to be really successful, must be, at all times, an internist.

DOCTOR SCHROETER (closing)—I want to emphasize that toxic dermatoses. of course, must, in their last analysis, be the result of toxins and toxins are chemical, whether bacterially produced in the throat, as in scarlet fever, in the bowels, or introduced by ingestion like acetanilid. All toxic dermatoses have characteristics which stamp them as such to every dermatologist, and whether produced by drugs or an undetected internal factor, they all have a striking resemblance in basic character. While the group of toxic dermatoses have, of course, been long recognized as a group of skin diseases, yet the specific production and modus operandi of the toxins have been hitherto, and are still, dark in many particulars. It has been my poor effort here to submit something more definite as to these matters and to incite more interest in the chemical and laboratory study of these toxins and their action.

MASTOID SURGERY *

By CULLEN F. WELTY, M. D., *San Francisco*

I believe that indications for and the type of operation for chronic suppuration may be selected as clearly in the near future as we today differentiate in findings and methods between the acute and the radical operations.

A patient who has had the radical mastoid operation needs attention three or four times a year as long as he lives. Without such attention, trouble will follow and, if neglected too long, reoperation may be necessary.

DISCUSSION *by John LaRue Robinson, Reno, Nevada; D. H. Trowbridge, Fresno; J. W. Green, Vallejo.*

BECAUSE of the many different operative procedures devised for acute and chronic suppuration of the mastoid process, it might be in keeping to tell you what I have been doing for some ten years past. Various operations have been tried; different dressings, as well as the technique of the operations.

Probably the individual surgeon will have better success with his own technique. There are many ways in which failure can come. So when I go into detail, it is absolutely necessary for you to carry out in detail everything that I may say. A part cannot be selected and another discarded, for I am going to make some very striking statements and, in a way, hold myself responsible for your performance, provided you fulfil the instructions.

To make this a little more striking, I am going to say that I have not lost a patient following an acute mastoid operation during a period of fifteen years, either in my city and county hospital service or among my own private patients. Many times my patients were not selected by myself, but were forced upon me because of the position I occupied.

In an acute otitis with temperature, tenderness and increased white blood count following an incision of the drum membrane, with increasing difficulties and a decided bulging of the posterior superior wall (the most reliable symptom of all), something must be done to relieve the pent-up pus. The interval that may be covered by such a process of reasoning is from three days to two weeks.

If at the end of two weeks or later there is a pulsation of the pus through the perforation, without any other symptom, the surgeon may be perfectly sure that he will find pus in the mastoid. If at the end of two weeks, or later, there is bulging of the posterior superior wall, without any other symptoms whatsoever, it is certain that the mastoid is full of pus. Facial paralysis is always an indication for immediate operation during the course of an acute otitis, and there are many other conditions quite familiar to all ear surgeons that should be considered to be clear indications for operative interference.

A condition that stands out alone in diagnostic value and was called attention to by me fifteen years ago, is that an acute otitis should not be allowed to exist for a period of more than six weeks without operation because the hearing is so likely to be impaired, or a permanent perforation remain that will be an annoyance for the balance of the individual's life. I consider it criticizable negligence to allow an acute otitis to become chronic, and I be-

* Read at the Annual Session of the Nevada Medical Association, Reno, September, 1924.

lieve the time will come when medical authorities will so consider it. In hesitating about doing an unnecessary operation, it is well for the surgeon to bear in mind that a good surgeon will not damage a healthy ear, but by delay every now and then a patient will be lost.

The indications for the acute mastoid operation are based largely upon clinical symptoms and history, coupled with a few definite findings. If a patient suffering from an acute mastoiditis does not improve steadily from day to day, surgical interference is positively indicated. This holds good any time, from the third day to the fourteenth day of the disease; after that the patient belongs in another class to be judged in another way. My technique for the acute mastoid operation contemplates the removal of every individual cell. Every cell that can be found with an instrument I call a searcher (not as large as the end of a pin) is removed until hard bone is encountered everywhere. The attic is opened freely and all cancellous bone removed from this area.

When every individual cell has been removed with a hand burr, chisel or other instrument, the cavity is packed with plain gauze. The ear is packed with plain gauze; a few stitches are taken at the angle and the head bandaged. An ice-cap is applied constantly to the operated ear for twenty-four hours and the wound is dressed in four days, provided everything remains satisfactory. Should the patient have fever following operation, such as I have described, one of three conditions are present in order of frequency—remaining cells carrying infection, beginning of an acute infectious disease, or cerebral complication, the most frequent of which is thrombosis of the lateral sinus.

Under favorable conditions it will be found that the discharge from the ear has ceased entirely at the first dressing. Loose packing is then reinserted in the ear; gauze is removed from the wound and loose gauze is inserted; gauze fluff is added and bandage again applied for two days, when the second dressing is done. The wound should continue to be dressed every second day, so long as it remains free from pus. As soon as pus appears it is dressed daily until it is again free from pus. In the event of oversized granulations developing, they are removed with a small curret, or cut down with nitrate of silver fused upon a probe and the silver neutralized with salt solution. If granulations fail to develop, a thick pack of iodoform gauze is inserted; changed daily until the granulations are normal, and then the part dressed with plain gauze. During the past ten years, under such treatment I have never found it necessary to reoperate a single, individual case in a series of about four hundred cases. (As this paper is about to go to print, I have had to reoperate one of my acute cases. The detailed history of this case would be too complicated to go into at this particular time.)

The radical mastoid operation I believe has come to stay. I do not see how it can be improved upon. However, I do not believe that every case of chronic suppuration of the middle ear (chronic after one year), especially in children, should have the radical mastoid operation.

Some ten years ago I did the acute mastoid operation in a series of twelve cases with chronic suppuration of the middle ear. Many cases were excluded. The only cases that were accepted were free from vertigo, tinnitus, headache, cholesteatoma, facial paralysis, and free from disease of the promontory or attic wall.

In this series all recovered but one, and it was found at the second operation that he had cholesteatoma. This must have been overlooked at my examination or at operation, or it was so small at the time that it was not seen. Ever since that time I have been using the same reasoning in deciding the kind of operative procedure in given cases for children (up to 12 years of age).

Certain operations for chronic suppuration of the middle ear impress the surgeon by their results, and I am not so sure but what in carefully selected cases, such as I have spoken of before in children, some adults might be successfully treated by surgery. I believe that indications for and the type of operation for chronic suppuration may be selected as clearly in the near future as we today differentiate in findings and methods between the acute and the radical operations.

When we differentiate between the various operative measures for the cure of chronic suppuration of the middle ear, some few lesions stand out alone and cannot be cured by any other procedure than the radical mastoid operation. These include cholesteatoma, facial paralysis, caries of the promontory, caries of the attic wall inside or outside, vertigo or any cerebral or cerebellar symptoms. The operation must remove the lesion; nothing short of that will suffice. This, I believe, will become the accepted condition governing operative procedures for chronic suppuration of the middle ear. Furthermore, I expect to see the gradual disappearance of chronic suppuration of the middle ear by the improvements that have been brought about in the preliminary care of acute otitis and mastoiditis. I am not going to enter into a discussion of the indications for the radical mastoid operation, because we have specific indications established by most of the textbooks of otology. The only cases warranting disagreement are those in which a specific indication does not exist. I refer to the cases that have a chronic discharge from the ear and do not have other symptoms or demonstrable lesions. Some of these patients are cured by treatment, but they do not remain cured. Probably 5 per cent of the cases cured without operation remain well. So, after trying for a short time to bring about a successful issue, I am ready to recommend the radical mastoid operation, or one of the surgical procedures for the cure of chronic suppuration. For these patients (who comprise the great majority) have been very satisfactory in every way. Among this class of patients I have never had one regret the operation. I am more enthusiastic about the radical mastoid operation than ever before.

I do not believe I have had more than four or six patients who were not cured. However, a patient who has had the radical mastoid operation needs attention three or four times a year as long as he lives. Without such attention trouble will follow, and if neglected too long reoperation may be necessary.

By the use of the graft described by me some ten years ago, the whole of the after treatment is very much simplified; the hearing is better and the patients make a much quicker recovery. It may be possible that the resistance to debris is not so good. However, it is a question. I have lost four patients of approximately six hundred operated upon—one from brain abscess and three from purulent meningitis.

210 Post Street.

DISCUSSION

JOHN LARUE ROBINSON, M. D. (Reno, Nevada)—Doctor Welty was made an honorary member of this Society in 1904; I think the first honorary member of the Society. He has contributed much to our enjoyment and enlightenment during the past twenty years, and we always appreciate his contributions.

The doctor's paper just read, I think, expresses the advanced thought of today upon the subject. The one point, however, I would like to touch upon is the method of dressing. For several years I have used a perforated rubber drainage tube in lieu of gauze, because: It seems to me more humane; my cases have dried in much shorter time; we have less scarring.

Recently, I had a paralysis of the right rectus following an acute mastoid operation, which gave me considerable concern. I sought, in vain, help from every angle possible for an explantion. In relating the circumstance to Doctor Welty, he immediately suggested that it might be "Gradinego's Syndrome," which was reported in Laryngoscopy, 1924. I now believe that my patient belonged in that classification.

Welty speaks positively concerning the proper procedure in chronic suppuration of the middle ear, and I am inclined to believe that most of us come to the same conclusion after years of experience.

D. H. TROWBRIDGE, M. D. (Fresno)—I wish to congratulate Doctor Welty on a very complete and interesting paper in which I agree almost entirely. He has expressed my ideas almost exactly as regards the treatment of mastoid infections, and I agree heartily with him on his line of treatment. Particularly, I agree with him in not neglecting to operate upon an ear that has been discharging for four or five weeks, which, having been properly treated, refuses to heal at the end of that time. I think it was Dench who claimed that any ear that discharged for two weeks had involvement of the mastoid. I would not say that every ear in which the discharge does not cease in four or five weeks would not eventually get well, but I do feel that any patient with an ear that has discharged for four or five weeks is much safer with a simple mastoid operation than to have it left in a discharging condition. Not only safer as a matter of life and death, but much more likely to have good hearing than if allowed to discharge for several weeks longer, even if at the end of that period the ear has become perfectly dry, as it will also be more or less permanently deaf.

There is very little danger from a simple mastoid operation if done by a skillful surgeon. On the other hand there is certainly much danger in waiting indefinitely since almost every year aurists of large experience observe several cases of meningitis which rapidly succumb. These fatalities could be avoided, as Welty points out, by early operation.

In my experience of about eight hundred mastoid operations, I cannot recall any bad results from any simple mastoid operation. Like Welty, I can say I have never lost a patient as a result of simple mastoid operation, but I have lost patients where the operation was complicated by meningitis or brain abscess that had already begun before I operated, and I have come to feel that one is hardly justified in operating upon mastoids where meningitis is already established, even although it is very slight. The only reason I would operate in a case of this kind is that occasionally in children where meningitis apparently exists, the symptoms have cleared up following operation. To illustrate, during the past winter a woman suffering from considerable pain was referred by her family physician to an aurist who did not consider the fact that her ear had been discharging for six weeks, or that she was suffering severe pain over that side of her head, sufficient to indicate mastoid involvement, since there was no tenderness on pressure over the mastoid, and even in the face of the severe pain and chronic discharge he neglected to operate. About five weeks later the patient was sent to me, but at the time I saw her the woman had a well-marked meningitis and soon succumbed to the disease. I am satisfied that an early simple mastoid operation would certainly have saved her life.

I wish to accentuate Welty's statement concerning thoroughness of operation. Every mastoid cell, whether diseased or healthy, should be removed if possible. Theoretically a perfect mastoid operation is one in which all of the cells are destroyed and the contents of the mastoid bone removed down to the inner table. If this is accomplished, the condition clears up earlier, healing is more rapid and there are fewer recurrences.

A case in point is one in which I did a radical operation this past winter, on a patient who had had a simple operation by an aurist about a year previously. Upon opening the mastoid cavity I discovered that only about one-half of the cells had been removed at the previous operation. This patient had suffered intense pain for several months as well as complete loss of hearing because he had had an incomplete simple operation, whereas a complete removal of all of the mastoid cells would have saved his hearing entirely and effected a cure at the time.

For the last four or five years I have ceased to use the gauze pack. After the first dressing, which is usually on the third day, I insert into the wound a specially selected, thin-walled, soft rubber drain of pure gum. This has a large caliber almost one-quarter of an inch in diameter and is inserted well upon to the top of the wound and is made shorter from time to time as the wound heals. In some cases I have been able to remove the drain within two weeks, others require a longer time. I am satisfied that this method of dressing is practically painless and I am equally sure it shortens the period of healing very markedly.

In conclusion, it is my opinion that if we have more simple mastoid operations, in a few years we will have very few radical mastoid operations to do.

J. W. GREEN, M. D. (Vallejo)—Doctor Welty has covered the ground of mastoid surgery in a more able manner than I could present it, but, I believe, he has omitted a most important detail when he fails to mention x-ray studies of his operative mastoids. In my own practice this is a routine part of examination in all cases where it is possible to obtain good pictures. I know that it is not absolutely necessary in making a diagnosis of mastoiditis and neither is it absolutely necessary to have this information in all cases to help determine when to operate; but I have seen two cases in which there was no discharge from the middle ear at any time and no mastoid tenderness or swelling which would help one to arrive at a diagnosis. One of these had been diagnosed typhoid fever and the other incipient tuberculosis. The x-ray is just as important as the laboratory findings in these cases. So much for its help in the unusual cases.

Concerning the ordinary case: A good x-ray tells you the comparative size of the mastoid cells, whether or not there is a marked process and great breaking down of the cell walls, whether there is anomalous placing of mastoid cells (such as extension toward the occiput). A study of both the normal side and that which is diseased will tell you (because in health, both sides develop exactly alike unless there has been previous inflammation) whether there is sinus thrombosis, peri-sinus abscess, subdural abscess and in many cases brain abscess. One is, occasionally surprised to note the enormous size of the mastoid in young children. All this information is of immense value prior to the operation.

It is a fact that early operation will prevent the serious complications and a good surgeon will not injure an ear, even if he should operate in a case which would have recovered without operation, but I have found it wise to operate only and when my best judgment advised me to do so. Every surgeon of experience has this additional sense of intuition. Procrastination has no place in mastoid surgery.

Discharge from an acute otitis media, which does not cease within two weeks after free paracentesis, gives me great concern, as there is one of two conditions present in these cases, mastoiditis or granulations within the middle ear cavity, or both. In all these cases a simple mastoid operation is indicated.

Complete removal of all mastoid cells invariably results in a cure, and I have used a different method of closing the wound and dressing than the one recommended by Welty for the past five years. I close the wound with clips or silk worm and place a cigarette drain of small size directly into and by the shortest route to the mastoid antrum. The wound is allowed to fill with blood prior to suturing. The drain is removed on the third day and many of these wounds heal in ten days or two weeks. This method has been termed the "blood clot" operation. This operation has been successful many times, even in the presence of a demonstrated "hemolytic streptococcus infection."

I am not so enthusiastic concerning the radical mastoid operation. Many chronic otitis cases may be cured by the simple mastoid technique. Perseverance with local treatment will, many times, cure a long established chronic otitis media.

In closing my discussion, to return to the matter of the x-ray, the picture is valuable only as the experience of the interpreter is based upon correlation of the findings at the operating table and the reading of the actual anatomy shown.

THE CALIFORNIA STATUTE AUTHORIZING THE COURT'S EXPERT: ITS HISTORY AND FUNCTION

By Andrew Stewart Lobingier, M. D., *Los Angeles*

INTRODUCTORY NOTE

Doctor Andrew Stewart Lobingier, serving as chairman of the Medico-Legal Committee of the California Medical Association and the Los Angeles County Medical Association, has led the forces of medicine for sixteen years, in efforts to bring about improvement in our laws governing medical expert evidence.

California now has a new law that gives promise of better things. Doctor Lobingier and Mr. Oscar Mueller, representing the Bar Association, who worked with the medical committee, are jubilant over the passage of the new law.

In transmitting the story of the long fight and a copy of the new law, published below, Doctor Lobingier writes:

"We are the first state in the Union to have achieved this legislation, and I think you will pardon me if I seem a bit enthusiastic over it.

"We are so proud of our victory that Mr. Mueller has proposed that we make an effort to interest the bar and medical associations of a number of Eastern states in the passing of similar legislation.

"I have made the report you requested as succinct as was consistent with the record, and would appreciate a prominent insertion in California and Western Medicine, with editorial comment from yourself, which I feel certain will be commendatory."

While not perfect, this law is the best that could be gotten, even with the active participation of the League for the Conservation of Public Health. It is a step in the right direction, and if courts, attorneys, and physicians will co-operate in its enforcement, disheartening and reprehensible scenes, which have too frequently characterized the administration of justice, will become less frequent.—Editor.

SIXTEEN years ago, on motion of the writer, the Los Angeles County Medical Association voted to request the council of the association to appoint a committee to confer with the committee on New Legislation of the Los Angeles Bar Association and act jointly with it in proposing an Act which should regulate the giving of expert evidence.

It was believed by this joint committee that a bill could be framed which would, to a great extent, correct the evils which have rendered the giving of expert testimony in our courts humiliating and worthless.

As chairman of the Medical Committee, the writer was invited to deliver an address on Medical Expert Testimony at a dinner given by the Bar Association to the Justices of the Supreme Court of California on the evening of October 15, 1909. The address was published in the Southern California Practitioner and in the California State Medical Journal.

The argument set forth that the expert witness, as usually called by plaintiff or defendant, became a biased advocate for the side which employed him. That our system of taking expert evidence was archaic, expensive, and obstructive of the ends of justice.

In certain foreign countries the expert witness was selected by the court and thereby became an officer of the court, and was chosen from the most competent and accomplished representatives of a given profession. The testimony of such a witness, answerable to neither side, but only to the high court which called him, was characterized by sincerity, dignity and fairness, free from bias or prejudice and, as far as could be, was a dispassionate statement of scientific fact.

Repeated efforts had been made in the various commonwealths of the republic to have enacted statutes which would in some such manner clothe the expert witness with authority and freedom which would facilitate the giving of such scientific testimony without prejudice to either side, a candid statement of scientific truth without bias. All such efforts had, and have until this time, proved futile. Certain members of the Bar, certain corporations which had a singularly obtuse slant on the merits of this legislation and, strange to say, certain presumably scientific members of the learned professions interested, opposed the enactment of any such statute. The result has been a long, stubbornly contested effort for more than twenty years in America, with final defeat in every instance except our own.

The first bill drafted by our joint committee and presented for passage in 1911 had reference only to the giving of medical expert testimony.

It was rejected by the Legislature because it was said to be class legislation and should have regulated the giving of all expert testimony of whatever kind.

A new bill was then drafted governing the giving of expert testimony of every profession or business and presented to the Legislature in 1913. It passed the Senate and failed in the House, owing to the vast number of bills at that time before the Lower House. The same bill was presented in 1915, passed both Houses, and was vetoed by the Governor. As this same executive was continued in office for another term, and as he was known to be unfriendly to such an Act, we concluded not to present the bill again as long as he was in office. The war then intervened and our interests and energies were elsewhere engaged. In 1921 the same bill was again presented, passed both Houses, and was again vetoed, but by another executive, who admitted "he had no personal objection to the bill, but

had been advised by certain attorneys that it was undesirable legislation."

Nothing was done thereafter until this year—1925. Mr. Oscar Mueller, representing the Los Angeles Bar Association, had been with me most actively in all our efforts to get this bill enacted into law. Mr. A. H. Koebig, representing the Society of Engineers; Dr. Thomas J. Orbison and Judge Frank Oster had also given sympathetic and valuable assistance.

In 1914, Mr. Mueller and I, at our own expense, visited various cities of the state and made addresses before bar and medical associations in behalf of this legislation. On invitation, we addressed a joint meeting of the San Francisco Bar and Medical Association. From time to time we made reports as chairmen of our several committees to our local and state associations. This year we determined to make one final effort to secure the passage and executive approval of the bill. Senator Jones of San Jose, always a loyal and indefatigable worker for the bill, did the most to make possible its passage in the Senate. At one time it was tabled in the Judiciary Committee of the House and seemed destined to fail of passage, but it was finally taken up and put through. Letters favoring its passage were written by university presidents and justices of the Supreme, Appellate, and Superior Courts, and sent to Sacramento. When Governor Richardson signed this bill he was kind enough to say publicly, "he considered it one of the best enactments of this Legislature."

What will be the effect of the statute in facilitating and dignifying the giving of expert testimony in the courts of California?

1. It will greatly reduce the number of experts called in a case and have thus a distinct economic value.

2. It will facilitate and expedite the trial of a case when the court calls its own expert.

3. It will dignify expert evidence, for the court's expert is an officer of the court and free from prejudice for or against plaintiff or defendant.

4. It does not invade the right or privilege of plaintiff and defendant calling their own experts.

5. It secures the expert of the court at a reasonable and just compensation, shared by the litigants and the state.

Finally, for eight or ten years Superior Judges of this city have, with consent of opposing counsel, called the court's expert with the greatest satisfaction to all and to very great economic advantage. So that long before the Act passed into law, the courts here had abundantly proved its practical value by showing its reasonable and just merits in the trial of their civil and criminal cases.

Recently, in the criminal case of the People vs. Young, the court called two alienists to pass upon the sanity of the defendant. The result of this first instance of record where the statute providing for the court's expert has been put into effect will be awaited with much interest.

Merritt Building.

THE NEW LAW

An Act to amend the Code of Civil Procedure of California by adding thereto a new section to be numbered and known as Section 1871, relating to experts, their appointment by the court, or a judge thereof, and providing for their compensation and manner of examination as witnesses.

The people of the State of California do enact as follows:

Section 1. A new section is hereby added to the Code of Civil Procedure of California, to be numbered and known as Section 1871, and to read as follows:

——. Whenever it shall be made to appear to any court or judge thereof, either before or during the trial of any action or proceeding, civil or criminal, pending before such court, that expert evidence is, or will be required by the court or any party to such action or proceeding, such court or judge may, on motion of any party, or on motion of such court or judge, appoint one or more experts to investigate and testify at the trial of such action or proceeding relative to the matter or matters as to which such expert evidence is, or will be required, and such court or judge may fix the compensation of such expert or experts for such services, if any, as such expert or experts may have rendered, in addition to his or their services as a witness or witnesses, at such amount or amounts as to the court or judge may seem reasonable. In all criminal actions and proceedings, such compensation so fixed shall be a charge against the county in which such action or proceeding is pending and shall be paid out of the treasury of such county on order of the court or judge. In all civil actions and proceedings such compensation shall, in the first instance, be apportioned and charged to the several parties in such proportion as the court or judge may determine and may thereafter be taxed and allowed in like manner as other costs. Nothing contained in this section shall be deemed or construed so as to prevent any party to any action or proceeding from producing other expert evidence as to such matter or matters; but where other expert witnesses are called by a party to an action or proceeding they shall be entitled to the ordinary witness fees only, and such witness fees shall be taxed and allowed in like manner as other witness fees. Any expert, so appointed by the court, may be called and examined as a witness by any party to such an action or proceeding or by the court itself, but when called shall be subject to examination and objection as to his competency and qualification as an expert witness and as to his bias.

Such expert, though called and examined by the court, may be cross-examined by the several parties to the action or proceeding in such order as the court may direct. When such witness is called and examined by the court, the several parties shall have the same right to object to the questions asked and the evidence adduced as though such witness were called and examined by an adverse party.

The court or judge may at any time before the trial or during the trial limit the number of expert witnesses to be called by any party.

THE PRE-OPERATIVE PREPARATION AND SURGICAL TREATMENT OF CHRONIC SPLENIC ANEMIA (BANTI'S DISEASE)

By Leo Pecci Bell, M. D., *Woodland, California*

Splenic anemia patients, in a well-advanced state, should be splenectomized as soon as possible after careful preparation by transfusion and rest. If splenectomy is resorted to before an advanced degree of cirrhosis has taken place, complete and permanent cures are obtained. Great care should be observed not to operate in a state of acute thrombo-phlebitis with temperature.

WHEN discussing the function of the spleen and its diseases, I am reminded of the story W. J. Mayo so frequently tells of the professor who asked a student to describe the function of the spleen. He stammered and stuttered and finally said that he had known but had forgotten. Whereupon the professor replied: "I am sorry you have for-

gotten because you appear to be the only one who has ever known."

It is definitely known that the spleen and liver of the foetus are blood producers; the liver up to about the fourth month, the spleen up to the fifth month. But, before birth, they lose the power of producing red blood and the spleen becomes a destroyer of debilitated red cells. The spleen begins to show senile changes at puberty, and after this time is more likely to show pathologic change.

Anatomically, the spleen is closely associated with the foregut. Its blood supply, which comes from the celiac axis, is altogether too large for its own nutrition. Moreover, when the arteries enter the spleen they lose their outer coats and become sinuses in which only the endothelium lies between the splenic pulp and the vessels. The fact that the splenic veins do not primarily enter the general circulation but become part of the portal circulation suggests that, whatever may be the action of the spleen on the blood, it is not completed and the splenic blood must pass through the liver to be acted upon there before it can enter the general circulation.

The sympathetic nervous system provides a close network about the splenic artery and its branches, and this in turn connects with the solar plexus and so with the adrenal glands. The vagus enervates the muscle fibers in the connective tissue. There has been some experimental work on the possible relationship between the spleen and the thyroid and thymus glands, but it is not conclusive.

Gaskill has proven that the spleen has very little anatomic nerve supply and deduces from this fact that it has no important internal secretion, since all organs of internal secretion have an abundant anatomic nerve supply. As proof of lack of internal secretion the normal spleen can be removed without any apparent disturbance.

Splenic anemia was first described by Gretsel in reporting a case from the clinic of Professor Greisinger, who had recognized lymphatic anemia and splenic anemia, and who used these names in his clinical dissertations to distinguish them from a large group of pseudo-leukemias, so-called. Banti, by collecting the pathological studies of Lodi, Concato, and Franzoline and the clinical studies of Greisinger and Gretsel, and by his clinical observations and necropsy studies in three cases, further separated this disease from a large group of splenomegalies. By his description of a disease which has been given his name, Banti stimulated investigation of disease of the spleen and particularly of splenic anemia.

Osler classifies splenic anemia as a primary disease of the spleen of unknown origin. It is characterized by progressive enlargement. Attacks of anemia are accompanied by a tendency toward hemorrhage, small in some cases, and by a secondary cirrhosis of the liver, with jaundice and ascites. That the spleen itself is the seat of the disease is shown by the fact that complete recovery follows its removal.

Rolliston, discussing this group described by Osler as "Primary Splenomegaly With Anemia" under separate headings, "Chronic Splenic Anemia" and "Banti's Disease," says he considers chronic splenic anemia as presenting the following characteristics: (1) Chronic splenomegaly, which cannot be correlated with any recognized cause; (2) the absence of enlargement of lymphatic glands; (3) chronic anemia with low color index; (4) the absence of leucocytosis and usually the presence of leukopenia; (5) the liability of copious gastro-intestinal hemorrhage from time to time; and (6) prolonged course without any tendency to spontaneous cure. Splenectomy is usually curative.

Rolliston, in discussing the relation between Banti's disease and splenic anemia, says: "The title Banti's Disease is now often used as synonymous with splenic anemia even by those who fully recognize that it is a sequel or terminal stage of splenic anemia, and does not occur in all cases even when unduly prolonged."

Rollins claims that Banti describes three stages of the disease named for him: (1) the preascitic stage in which splenic enlargement is present with or without anemia; (2) the transitional stage, of which the most prominent symptom is diarrhoea and at which time anemia and blood changes are found, the liver is somewhat enlarged and jaundice may be present; (3) the ascitic stage, or Banti's disease proper.

The normal function of the spleen is considered to be chiefly that of a mechanical filter, which removes from the blood degenerated red blood cells and toxic agents above colloid size, such as microorganisms and debris, on which it acts before sending them to the liver for further detoxication and elaboration. It also develops lymphocytes.

The spleen, when chronic splenic anemia develops, acts as a focus of infection, being a storehouse for infection whose toxic materials are dumped too rapidly into the liver, causing a cirrhosis to take place. It also undergoes changes of function which cause an overdestruction of red blood cells.

The relation of the spleen and liver in action has been compared to the glomeruli and tubuli of the kidneys, for the spleen extracts certain products which it passes on to the liver for disposal. This is true not only of waste products, but also of certain substances which the liver must return to the body to maintain normal life. With regard to the latter function, the spleen may be considered as a "scrapping plant," where the worn-out blood cells are delivered to have removed from them whatever may be of further service to the body.

Gato, in animal experiments, found that the amount of pigment in the bile was relatively diminished after splenectomy, both with and without the administration of hemolytic agents.

The spleen assists in producing immunity. This is indicated by experiments in which Morris and Bullock have demonstrated that splenectomized rats were more susceptible to ordinary infections, and to sublethal injections of live bacteria, than were others on whom abdominal castration had been done for controls. It is well known that the spleen can filter parasites of disease from the blood, but it cannot destroy these organisms. Probably the most striking example of this is the accumulation of plasmodia of malaria, the ague-cake of the tropics. The same is true of the spirochaeta pallida. The enlargement of the spleen in typhoid fever and chronic infections is

due to the accumulation of bacteria and the reaction to infection.

The spleen apparently does not initiate the pathologic processes with which it is concerned, but acts as a secondary agent.

Thus the spleen in splenic anemia shows marked fibrosis, including thickening of the capsule and trabeculae and changes of a fibrotic nature in the reticula. Endophlebitis is also sometimes to be found. The spleen pulp itself is greatly increased in amount, chiefly due to increased number of venules. Wartkin believes that in many, if not in all, cases of splenic anemia the underlying condition is obstruction in the splenic and portal circulation most commonly due to thrombophlebitis. The action of the spleen normally may be likened to that of a filter, removing not only old red cells, but also bacteria from the circulating blood, and we must suppose the ordinary acute splenic tumor to be, in part at least, in connection with this function. If the splenomegaly is the result of the isolation of malarial organisms, or of tubercle bacilli or the spirochetae of syphilis or other organisms, then we have a specific disease and we regard the enlargement of the spleen as merely one of the body protective measures. There must be, however, many similar splenic reactions against various bacteria or toxins. If this be pronounced, of fairly long standing, and accompanied by anemia of marked grade, we group the cases as splenic anemia or Banti's disease. This, at least, is the present status of the matter. This theory practically infers that the anemia is a secondary matter, and that the splenic enlargement is the primary thing. We could, of course, refer the anemia to hemorrhages, except for the fact that they are not constant and, in fact, are absent in some cases, showing very low red counts. The red cells of splenic anemia do not show an increased fragility. W. J. Mayo leans to the opinion that a fibrotic spleen destroys more red cells and that, in the absence of any special stimulation of the bone marrow, anemia must result. He suggests, too, that the disease changes may bring about reductions of the pigment production and thus actually reduce the hemoglobin balance.

In an exhaustive study, Krumbhaar considers that all diseases of the blood in which anemia is produced depend on the dynamic standpoint of the constant interplay of the blood-forming and blood-destroying apparatus, termed the hemolytopoietic system, and the adjustment there spoken of as the hemolytopoietic balance. The question, considered in regard to the anemia of splenic anemia, is whether this condition is due to an excess of blood-destruction or to a paucity of blood-formation. In considering the cause of the anemia the chief factors are the bone marrow, spleen, liver, lymph nodes and reticuloendothelial apparatus. By the close inter-relation of this system and the taking over of the function of one by another in disease, Krumbhaar explained the rapidity with which the blood picture approaches the normal after splenectomy.

In the Bradshaw lecture for 1920, Sir Berkeley Moynihan draws attention to the fact that the spleen is not a specialized organ with one or two particularly developed functions, but is one of a group of organs more or less interdependent. Failure to recognize this is, perhaps, the chief reason why the splenic functions have for so long remained obscure. Moynihan's conception of the problem is more illuminating, in that he considers the spleen to be closely connected with and, in fact, a part of four important systems of the body.

(1) *The spleen as a part of the hematopoietic or blood-making system.* Formation of red and white cells takes place in the spleen only during embryonic and early post-natal life, as a rule. In infections and leukemia, however, the spleen may take part in the production of white blood cells. The relation of the spleen to the bone marrow has already been discussed.

(2) *The spleen as a part of the reticuloendothelial system.* We have already described the endothelial cells as lying loosely in the reticulum of the spleen pulp. The liver also has certain large phogocytic cells, the star cells of Kupffer which are endothelial in nature. They are known to proliferate after removal of the spleen, and they may take up iron pigments. Lymphatic glands also contain phogocytic endothelial cells, which multiply after splenectomy. The bone marrow, too, contains somewhat similar cells. Thus, these structures seem definitely related morphologically, and we can more easily understand why blood pigment is found in the liver, lymph glands, and bone marrow when hemolyzing poisons are administered. It has been found, in studying the immature bodies of cholera, that the spleen and long bone marrow contains the largest proportions of these substances. Various other experiments on animals indicate that the spleen is an important power in resisting infective processes.

(3) *The spleen as a member of the digestive system.* All the blood of the spleen passes into the liver, carrying hemoglobin within the bodies of the wandering cells. The spleen, therefore, stands in an important relation to the liver. It is known, of course, that synchronous with digestion there is a slow expansion of the spleen, but what bearing this change may have upon so-called digestive leucocytosis is not clear. It is stated that splenic extracts cause intestinal peristalsis. A further connection with the digestive system lies in the probability that the spleen takes part in purin metabolism.

(4) *The spleen as a part of the sympathicoendocrine system.* It is assumed that the spleen has a sympathetical endocrine function, but it is impossible to prove it.

In a detailed resume, Connors considers cases of splenomegaly which may be classified from diagnostic standpoint into acute and chronic. I shall discuss here only chronic forms, the most important of which, from a differential standpoint, are myelogenous leukemia, lymphatic leukemia, Hodgkin's disease, chronic malaria, hemolytic jaundice, polycythemia-vera, pernicious anemia, Gaucher's disease, Von Jaksch's disease, syphilis (hereditary and acquired), tuberculosis, kala-azar, chronic infections, Still's disease, purpura, hepatic cirrhosis, obstruction to the portal vein, Amyloid disease, and tumors.

The diagnosis of splenic anemia depends on the existence of splenomegaly, varying degrees of anemia of the secondary type, usually leukopenia and a relative lymphocytosis, and the frequent occurrence of gastric and intestinal hemorrhages. Because of the hemorrhages, the condition is often diagnosed as gastric or duodenal ulcer, the splenic enlargement, even

though considerable, being overlooked or disregarded. It should be emphasized that in cases of gastric or intestinal hemorrhage, splenic anemia must be eliminated as a cause. In the later stages of the disease (Banti's disease) the existence of a very large spleen and ascites, due to the associated hepatic cirrhosis, together with the foregoing findings, usually suffice to make the diagnosis. Sometimes it will be impossible to separate the condition from primary hepatic cirrhosis with splenomegaly; the existence of a large liver and a comparatively small spleen or an atrophic liver with rather a small spleen, especially if ascites is present, favors a diagnosis of hepatic cirrhosis. Occasionally syphilis presents such a picture. Norris, Symmers, and Shapiro believe that all cases of so-called Banti's disease are due to syphilis.

The pathological findings and clinical records of sixty-nine patients with splenic anemia on whom splenectomy was performed at the Mayo Clinic from November 14, 1905, to September 1, 1920, were reviewed by Chaney in great detail. The most important points in his findings are as follows:

1. A composite picture of the pathological findings in the spleen in splenic anemia was found to be one of generalized fibrosis. There were no findings in the splenic tissue which would enable the pathologist to make a positive diagnosis of splenic anemia, yet the abnormality was as characteristic of this disease as in other diseases producing splenomegaly.

2. The average weight of the spleens was found to be 1015 gm.

3. The average age of the patients with splenic anemia was 33 years, and the number of males about equal to the number of females. There was apparently no familial tendency.

4. Their most common complaints were mass in the left abdomen, gastric hemorrhage, and weakness.

5. While abdominal pain was rarely given as the chief complaint, the histories brought out the fact that thirty-two of the patients had attacks at some state of the disease. In many instances the pain was probably due to perisplenitis.

6. In sixty-nine patients the average erythrocyte count was 3,700,000 Hg., 53 per cent; leucocyte count, 4990; coagulation time and the fragility tests were normal and the Wassermann tests and the stool examinations were negative.

7. A comparison of the number of lymphocytes in the differential count showed that the average was within the limits of normal. A lymphocytosis did not seem to be a characteristic in this series.

8. In the study of the liver tissue in the cases of splenic anemia, thirty showed a definite cirrhosis, but in none was the liver entirely normal.

9. Twenty-four of the patients with cirrhosis had ascites.

10. Twenty-three and three-tenths per cent of the patients with cirrhotic livers died within forty days of the operation, while within the same length of time the death rate of the remaining patients was only 12.8 per cent.

Zaccarelli, in 1549, and Ferrerius, in 1711, have been accredited, by some authors, with removal of the spleen, but these cases have been discredited by others for lack of sufficient detailed records. The earliest authentic cases of splenectomy are those reported by Quittenbaum of Rostock in 1826, Kuchler of Dermstadt in 1855, and Spencer Wells of London in 1866, each reporting a case of splenectomy.

In each case the patient died a few hours after operation. Plan, in 1867, did the first successful splenectomy from which the patient recovered.

From Collier's table of twenty-nine cases of splenectomy reported from 1549 to 1881, we find a mortality rate of 72.4 per cent. Van Wert's thesis of 1897 records 274 cases with 104 deaths, or a mortality rate of 37.9 per cent.

Modern surgical methods and proper selection of cases have reduced the mortality in splenectomy from all causes. Giffen, in 1921, reported a series of seventy-three splenectomies for splenic anemia in which nine deaths are recorded, a mortality rate of 12.3 per cent.

To illustrate what has been accomplished by splenectomy in splenic anemia, I would like to cite three cases from our clinic which present the three types of cases described by Hollins.

During the last two and one-half years, six cases of splenic anemia have been encountered, illustrating the types of the disease, progress, and operative cures.

CASE REPORTS

Mr. E. W. Age 33. Superintendent Water Company. First observation on January 8, 1924.

Present Illness—Following a fall in December, 1919, patient was ill three days and complained of weakness. Following this he had a very severe hemorrhage, vomiting blood and also passing a considerable quantity by bowel. At this time he was confined to bed for fourteen days. X-ray diagnosis was negative. His second hemorrhage was in August, 1920, at which time he vomited blood and was in bed one week. In May, 1921, the third hemorrhage occurred. Fourth hemorrhage January 4, 1924, at which time the patient passed blood by bowel two days. Since the first hemorrhage, the patient has complained of weakness, but feels that this has not been progressive. No symptoms referable to ulcer. No genito-urinary, cardio-respiratory, or sensory symptoms.

Physical Examination—General Appearance: Sallow and anemic. Throat: Infection of tonsils, second degree. Teeth: Dental sepsis, second degree. Blood pressure, 110/80. Abdomen: Slightly tender in upper left quadrant. Liver: Palpable; not markedly nodular. Spleen: Enlarged eight to ten times.

Temperature, pulse and respiration, normal.

Laboratory Findings—January 8, 1924, Hg., 42 per cent; r. b. c. 2,800,000; w. b. c. 4300; color index .7 plus; number cells counted 200; polys 48 per cent; small lymphs 31; large lymphs 16.5; large monos 2; transitional 2.5; slight anisocytosis; slight poikilocytosis; moderate polychromatophilia; coagulation time 6 minutes; fragility .28 per cent to .30 per cent increase in resistance. Blood Wassermann negative. Urinalysis negative.

On January 11, 1924, this patient was transfused with 450 cc. of blood, the indirect sodium citrate method being used, and six days later (Jan. 17, 1924) splenectomy was done. The following findings were made at operation: Stomach showed large vericosities over fundus and under pyloric end—no sign of ulceration of stomach. Liver showed little cirrhosis compared to average case of Banti's Disease. Gall-bladder was thick-walled, emptied easily and there were no stones. Spleen six to eight times normal size, with extensive adhesions over the surface, and was covered with thick plastic exudate of greyish color. The patient had an uneventful post-operative course and was dismissed on the fifteenth day post-operative in very good condition. By the first of March he felt very well and was allowed to resume light work. May 19, 1924, Hgb. 82 per cent, r. b. c. 5,140,000, condition excellent. Early in September, 1924,

the patient reported again for observation: hgb. 86 per cent; r. b. c. 4,650,000. Had resumed heavy work and felt himself entirely well. Very well at present time.

Mr. F. B. Laborer. Age 28.

Present Illness—Five years ago onset of present trouble began with a sudden attack of vomiting blood. Considered hemorrhage quite severe; was in the army and did not stop drill work. After this time felt fairly well until one year ago when he again had a severe hemorrhage from the stomach—this did not weaken him greatly. He felt normal after vomiting and continued to work. The third attack of vomiting was March 27, 1923; of the same nature and also passed blood by bowel; no marked weakness following this attack.

Physical Examination—Seems in good physical condition except for some pallor. Throat: tonsils atrophic. Abdomen: Spleen freely movable about 4 inches below costal margin. Liver enlarged about 4½ inches below costal margin. Blood pressure 165/90.

Laboratory Findings—March 29, 1924, Hgb. 45 per cent; r. b. c., 1,130,000; color index, 1.9 plus; w. b. c. 4400; 200 cells counted; small lymphs, 25.5; large lymphs, 2.5; large monos, 2; trans, 3; polys, 66.5; basophiles, .5; slight anisocytosis; moderate poikilocytosis; slight bassophilic stippling; moderate polychromatophilia; bleeding time 10 minutes. March 29, 1924, transfusion of 400 cc. of citrated blood was given. April 3, 1924, w. b. c. 3400; Hgb. 50 per cent; r. b. c. 3,470,000. April 16, 1924, splenectomy done; liver markedly cirrhotic; spleen five times enlarged, plastic lymph exudate over entire surface. Marked vericosities over stomach and diaphragm; no free fluid. Usual splenectomy done.

Reaction following splenectomy excellent. Convalescence was entirely uneventful. Within two months, the patient was working again, and has had no trouble. Recent Hgb. is 75 per cent; r. b. c., 4,500,000. Has had one hemorrhage since July 1, 1924, by bowel, moderately severe. Apparently not affected by hemorrhage and working again, as before.

Mr. E. L. M. Age 29. Examination, October 30, 1922. Complaint: Weakness and loss of appetite.

Present Illness—About 7 years ago began to lose weight and have a feeling of dragging and loss of ambition, with marked weakness on exertion. Would gain weight for a time and feel better; later would lose again. Has grown slowly and progressively worse with greater loss of strength. Night sweats for six months; no temperature or chills. Bleeding from gums and nose. No vomiting of blood or passing blood by bowel. Has noted enlargement of abdomen for last two years.

Physical Examination—Poor physical condition; sallow and emaciated. Teeth: pyorrhoea and dental sepsis III. Spleen very large, extending to umbillicus, and quite painful. Abdomen distended to a moderate degree.

Laboratory Findings—October 23, 1922. Hgb. 44 per cent; r. b. c., 3,860,000; w. b. c., 14,200, group III. On admission malarial parasites were demonstrated. The patient was given a course of intravenous salvarsan and intravenous quinine with one course of Deep Therapy over the spleen, over a period of six weeks. The night sweats disappeared and he felt much better, but the spleen grew larger. No transfusion given.

Splenectomy on October 4, 1922. Spleen densely adherent to diaphragm and lateral wall and about ten times normal size. Usual technique of operation. Considerable hemorrhage. Liver markedly cirrhotic. No gallstones. For six months following operation, patient had to be tapped five times, but finally began to get better and has gradually improved in strength. Has been working as foreman on a ranch for the last year. July 18, 1924, white count 5600; 31 small lymphs; 4 per cent large lymphs; 62 per cent transitionals; Hgb. 80 per cent; r. b. c., 4,130,000. Very well at present time.

Mrs. J. E. K. Age 29. October 10, 1922.

Present Complaint—Rapid heart and weakness for about four years, with palpitation of heart, excitability, tremor of hands following exertion—all symptoms mild in degree. Marked loss of strength. About three years ago began to have enlargement of upper abdomen which continued for six to seven months and gradually receded.

Physical Examination—Teeth, marked dental sepsis. Heart, moderate dilatation, systolic murmur over base and apex. Spleen enlarged three to four times. Considerable pallor.

Laboratory Examinations—Hgb., 23 per cent; r. b. c., 3,150,000; leucocytes, 4400; cells counted, 200; small lymphs, 23 per cent; large lymphs, 1.5 per cent; large monos, 2.5; trans, 4.0; polys, 68.0; eosin, .5; baso, .5; slight anisocytosis; moderate poikilocytosis; slight polychromatophilia. Urine examinations negative. The patient was given a transfusion of 500 cc. of citrated blood and advised to have all foci of infection removed as she had many bad teeth. Her tonsils were negative and there was no history of previous tonsillitis. Since this time the patient has improved very markedly in strength and activity. Has been kept on iron at intervals. Present Hgb., 72 per cent; r. b. c., 4,200,000; spleen and liver about comparable in size. Size of spleen has diminished until it is just palpable under the costal border. Blood picture about the same.

Miss H. S. Age 40. May 9, 1924.

Present Illness—January 11 began to have diffuse abdominal cramps and severe vomiting and chill; high white count 13,000; temperature 102. Operated elsewhere January 23, 1924; chronic appendix; liver and gall-bladder normal. Patient seemed to go into uremia afterward. April 2 had recovered sufficiently to be taken home. Hgb., 50 per cent. For two weeks stationary; some tendency to diarrhoea. April 28 some blood in vomitus; some acute pain in abdomen. On entry into hospital May 4, 1924, spleen was palpable 3 cm. below costal margin. Blood count: Hgb. 35 per cent; r. b. c., 2,410,000; slight poikilocytosis; moderate polychromatophilia; w. b. c., 6200; 200 cells counted; polys, 71.5; small lymphs, 21.5; large lymphs, 2.0; large monos, 2; trans, 2; eos, 1. Blood urea normal. P. S. T., normal. Transfusion of 500 cc. of citrated blood. Feces examination negative. Wassermann negative. Fragility increased. X-ray of chest negative. Since leaving the hospital has had a very severe hemorrhage with more transfusions. Was then diagnosed as toxic ulcer elsewhere. Has had two hemorrhages and two transfusions since leaving hospital. Blood shows same picture.

Miss H. G. Age 6. November 6, 1924.

Present Illness—April, 1923. At this time parents noted nose bleeds as often as four or five times in twenty-four hours. The child became languid and tired and did not wish to play with others, though she apparently had no particular weakness. Skin and whites of eyes, yellow.

The initial attack of jaundice lasted about two to three months. Since that time attacks of two to three days' duration every month or so. No pain at beginning of P. I., but shortly began to complain of severe colicky pain under umbilicus and the longer attacks of pain were usually associated with the jaundice mentioned. In addition many transient attacks of pain. Constant tenderness under umbilicus; occasional tenderness in pit of stomach. Vomited during early stages of this illness, with the attacks of pain and jaundice, but, during last eight months, has been nauseated with attacks without vomiting. Temperature ranging from 99½ to 101½, the latter being in August and September. Temperature rise usually in morning. Enlargement of the abdomen was first noted at the time of onset of the P. I.

Physical Examination—General Appearance: Child in good flesh and nutrition; seems somewhat anemic. Throat: Enlargement of tonsils with infection. Blood Pressure: Systolic 95; diastolic 50. Abdomen: When lying flat there is a definite enlargement of the upper left abdomen. On palpation spleen extends down to about 1½ inches above the umbilicus. Moves freely to about ½ in. of navel. Seems slightly tender to touch. Liver extends down about 1 to 1½ inches below costal margin. Slight tenderness below and around umbilicus. Temperature: Slight rise.

Laboratory Reports—Blood count; r. b. c. 3,450,000; Hgb. 65 per cent; color index .95; w. b. c., 3150; polys, 50 per cent; small monos, 49 per cent; large monos, 1 per cent. Blood examination: No parasites found. Slight anisocytosis, moderate poikilocytosis. Reticulated cells, 0.6 per cent. Myelocytes, none found. Urinalysis negative. Feces examination, negative. Urine examination for bile,

negative. Blood Wassermann, negative. Fragility test: Complete hemolysis, .32 per cent (NaCl); beginning hemolysis, .42 per cent (NaCl).

Diagnosis—Banti's disease (splenic anemia) chronic appendicitis. Immediate operation recommended, but, to date has not been performed. Child to return in March for splenectomy.

In considering this group of splenic anemias, it should be borne constantly in mind that the basic pathology of the spleen is generalized thrombophlebitis, resulting in secondary anemia, the initial onset coming as an acute thrombo-phlebitis, following most commonly influenza, or follicular tonsillitis. The probable bacteria is the streptococcus, which has a particular attraction for lymphoid tissue. Many spleens are found enlarged in influenza if a careful examination is made in severe cases. The fact that all individuals who have respiratory infections do not develop splenic anemia is due to resistance of the individual to streptococcus infections. The streptococcus, incysted in lymphoid tissue following an attack of follicular tonsillitis may result in rheumatism and endocarditis. Thus, when in an individual with lowered resistance the spleen is infected and repeatedly fed with more bacteria which it constantly strains out from the blood, fibrotic changes are initiated and the spleen itself becomes a focus of infection, the excess blood destruction probably being a toxic action from bacterial growth within the spleen. When these toxins, generated by the spleen, are poured into the liver, parenchyma cell destruction of the liver takes place and the destroyed parenchyma tissue is replaced by fibrous tissue. As the anemia becomes pronounced, the fibrosis and liver destruction increase until the ratio of liver destruction exceeds liver regeneration; then hepatic insufficiency and ascites occur. Remissions and exacerbations are caused by acute respiratory infections, bringing about a flare-up of thrombophlebitis.

The splenectomies reported are striking examples of this syndrome of development. In all, the respiratory or streptococcic etiology was the most probable. In one of the unoperated cases (Mrs. J. E. K.) there has been a marked improvement on one transfusion and removal of the focus of infection in the teeth. All have exacerbations of their anemia, with thrombo-phlebitis of the spleen following respiratory infection.

No case of splenic anemia should be splenectomized until careful and sufficient observations have been made. It is my belief that splenic anemia can be arrested in its early stages by removal of foci of infection, such as infected teeth and tonsils, which are the portals of entry of the streptococcus. The resistance of the individual at the same time should be strengthened by transfusions.

Splenic anemia in a well-advanced state should be splenectomized as soon as possible after careful preparation by transfusion and rest. If splenectomy is resorted to before an advanced degree of cirrhosis has taken place, complete and permanent cures are obtained. Great care should be observed not to operate in a state of acute thrombo-phlebitis with temperature.

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THE RELATIONSHIP OF THE CLINICAL PATHOLOGIST TO SURGICAL PRACTICE *

By VERNE C. HUNT, M. D., *Rochester, Minn.*
(From the Division of Surgery, Mayo Clinic)

The investigation of the end results of disease by Hunter and the physicians of his time gave impetus to the scientific investigation of disease. With the advance in the art of surgery there has been a parallel advance in the science of pathology, although in the early days of development the two were but remotely related. The extension of vision by the lens has cemented their union until the clinical pathologist has become indispensable to the progress of surgery. The necropsy pathologist will continue to correlate clinical, operative, and anatomic findings, seeking the truth, so that surgical deaths shall not have been in vain.

BY THE sense of sight and through the institution of methods of extending vision, it has become possible to explore still further the mysteries of disease, its cause and manifestations, and to base therapeutic measures on scientific principles.

The science of pathology and the art of surgery possessed little in common until the latter part of the nineteenth century. John Hunter definitely established the science of gross pathology, securing his specimens at necropsy, and made possible the teaching of pathology, not only from clinical subjects, but from actual material removed from the cadaver. Hunter's investigations revealed the ultimate result of disease and afforded opportunity for the study of effects of disease on the various organs of the body, in the gross and by the unaided eye. While the principles of magnification of vision by the microscope were evolved in the seventeenth century, before Hunter's time, yet magnification had not attained a power of more than 270 diameters and aided little in the examination of tissue. However, even so, the latter part of the seventeenth century disclosed the usefulness of the microscope in the cellular description of green plants, the malpighian corpuscles of the kidney, red blood cells, spermatozoa, and so forth. But not until the middle of the nineteenth century was knowledge of morbid anatomy based on the knowledge that the cell was the living unit. The description of the cell nucleus, the nucleolus, and protoplasm led to the cell theory of Schieden and Schwann and to Virchow's "cellular pathology," which was but the application of the cell theory of the botanist to human structures in disease.

The art of surgery, which is older than the science of pathology, owes its early advancement to the knowledge of gross anatomy and pathology, and to the later extension of vision by means of the microscope and various instruments for visual examination of the eye, larynx, esophagus, urinary tract and rectum, and by means of the roentgen ray.

Progress of surgery was retarded in the early days by the suffering occasioned by operative measures, and operations were resorted to only in dire necessity. However, with the discovery of anesthetics, surgery received a new impetus, and the access to the abdomen, chest, and head thus afforded, revealed diseased tissue within these cavities in life that hitherto had been seen only at post mortem. While

* Read by invitation at the meeting of the California Medical Association, Yosemite, California, May 19, 1925.

necropsy examination continues to add to our knowledge of pathology the study of disease in living tissue, made possible by surgery, enables us to obtain more knowledge of the progress of disease, and to institute more efficacious treatment.

Surgery has made possible the study of disease in living tissue, and such study has guided, to a considerable extent, the development of surgery. One is so much dependent on the other that the surgeon can no longer render the patient the greatest benefit without the closest co-operation with the clinical pathologist. The surgeon of today has had abundant opportunity to study gross and microscopic pathology, and the greater his knowledge of pathology, the more reliable is his judgment. However, situated as the surgeon is, he must usually base his judgment on only his knowledge of gross pathology. The inadequacy of familiarity with gross pathology alone is forcefully illustrated by MacCarty's statement that, of 47,434 surgical specimens removed at the Mayo Clinic, 18.2 per cent required microscopic diagnosis, and, further, that 5.7 per cent of all surgical cases which afford surgical specimens have tissue removed for diagnosis during operation, and that microscopic examination of 2.65 per cent of all such specimens does not corroborate the clinical or pre-operative diagnosis. Of these cases, 60 per cent require quite different surgical procedures as a result of the microscopic diagnosis. In spite of considerable knowledge of microscopic pathology, the surgeon, because of his immediate duties, does not have the opportunity to apply that knowledge at the moment, and must depend for the desired information on the clinical pathologist, who should be prepared to supply it without delay. Such pathologists are not numerous, for too often the pathologist is one whose training has been in the study of fixed tissues, to the exclusion of tissues freshly removed from the body.

Progression from the diagnosis of fixed tissues to proficiency in the microscopic diagnosis of fresh tissues demands study of fresh tissue cells. Wilson and others have described rapid methods of preparing fresh tissues for microscopic examination, requiring only a few moments. Inasmuch as the exact determination of the nature of many lesions requires microscopic examination, and since the surgical procedure is so often dependent on the microscopic diagnosis, immediate examination of fresh tissue is indispensable, not only to the surgeon, but to the best interests of the patient. This is particularly true in the diagnosis of malignant lesions. Evidence is not lacking that dissemination of neoplastic cells occurs when a malignant lesion is incised, and microscopic examination of the fixed tissue delays the operation for several days. However, MacCarty and Sistrunk have shown that there is no risk of dissemination in waiting a few moments for microscopic diagnosis in order that the surgical procedure may be governed by the diagnosis of the fresh specimen.

Many methods are available for making clinical diagnoses, yet Cabot has reported an error of approximately 50 per cent in clinical diagnosis. The frequent necessity of removing glands for diagnosis, excising breast tumors for diagnosis, performing diagnostic curetments, and so forth, illustrates the difficulties of clinical diagnosis. Diagnosis of many pathologic conditions can be made before operation; others can be diagnosed during surgical exploration before tissues are removed, and some can be diagnosed grossly after tissues are dissected and removed; but, as MacCarty has reported, there is a certain percentage which cannot be diagnosed positively without microscopic examination.

In order that the pathologist may become proficient in the diagnosis of fresh tissue, he must have access to all fresh tissue so that he may study the normal and the pathologic, and the intermediate stages between the two. The study of gradations is particularly necessary in the diagnosis of suspected malignant lesions, for they are not of mushroom growth—benign one day and malignant the next. MacCarty has shown that parenchymal germinative cells of some organs undergo certain morphologic changes, and has described the epithelial hyperplasia as primary, secondary, and tertiary, defining these changes, respectively, as benign, doubtful, and malignant epithelial growths. In giving his opinion after microscopic examination, the pathologist requires the surgeon to have sufficient knowledge of gross pathology to be able to excise a representative specimen for examination. Malignancy may be actually present, and the microscopic examination by the pathologist fail to reveal it, unless a representative specimen of the diseased tissue is presented.

The educational campaigns conducted by the American Society for the Control of Cancer can accomplish their purpose only through the institution of methods of diagnosis which will lead to the early recognition of the absence or presence of malignant lesions. That accurate clinical diagnosis is not always possible, is admirably pointed out by MacCarty, who utilizes tumors of the breast for this purpose. He shows that in 20.6 per cent of the cases the clinical diagnosis is not indicative of the true pathologic condition, an uncertainty illustrated by the terms "nodule," "tumor," "mass," "growth," and so forth. Furthermore, he states that 16.7 per cent of all clinical diagnoses of tumors of the breast are incorrect, so far as malignancy and benignancy are concerned, and that 5.5 per cent of all clinical diagnoses of malignant conditions of the breast are incorrect. With educational propaganda these errors of diagnosis are increasing, and they are legitimate errors, for in but a small percentage of instances is it possible to make a correct clinical diagnosis of the exact pathologic process in the breast early in its development, on account of the absence of clinical manifestations by which it may be recognized as benign or malignant. Only by early excision of tumors of the breast is early diagnosis possible. After excising the tumor the surgeon or pathologist may be able to make a diagnosis on gross appearance, but MacCarty has shown that 18 per cent of all carcinomas of the breast have not been positively diagnosed by the clinician or surgeon and have required microscopic diagnosis. It is unquestionable that even careful clinicians and excellent surgeons make such mistakes. To correct such clinical errors and supplement the diagnostic ability of clinician and surgeon demands the services of an expert clinical pathologist for the examination of the fresh tissue. When the diagnosis is questionable or the significance of the

clinical manifestations or gross appearance is in doubt, the scope of the surgical procedure depends on the pathologist's verdict.

No longer may the surgeon who has not readily accepted the advantages of fresh tissue diagnosis fortify his objections with the statement that when he has been in doubt from clinical manifestations and gross examination of tissue the pathologist has also been in doubt. In studying fresh tissue, the pathologist has been enabled to study living cells and has observed those cellular changes which occur during the intermediate stages of development of a lesion from benignancy to malignancy; and he who is adequately trained is not in doubt in the recognition of such changes. Considerable difference of opinion may exist among pathologists expert in the microscopic examination of fixed tissues, but it is unquestionable that cellular degeneration, by virtue of the length of time since the death of the tissue, even though fixed, may be partly responsible for the disagreement. It would seem that pathologic processes and nomenclature will be standardized only through the study of fresh tissue.

It has been a frequent clinical observation, in following the post-operative results of the treatment of malignancy that some patients live much longer than others, even though the lesions were of approximately the same degree of development and were treated by the same methods of excision. MacCarty, Powell, and others have shown that such microscopic manifestations as lymphocytic infiltration, fibrosis, hyalinization, and cellular differentiation exert a marked influence on post-operative life, and that the average post-operative life is longer when these factors are present singly or in combination. These observations suggest that such activities play a significant part in the natural defense mechanism against cancer after it has once developed.

Broders has indicated that cellular activity exerts a marked influence on the progress, clinical manifestations, and ultimate results of treatment of cancer. He has utilized cellular differentiation as a means of grading the degree of malignancy in epithelioma, classifying malignancy under four grades, each dependent on the amount of differentiation of the epithelial cell. The most highly malignant epithelioma shows little or no tendency toward cellular differentiation. If about three-fourths of the epithelial cells are differentiated and one-fourth undifferentiated, the malignancy is graded 1; if the differentiated and undifferentiated cells are about equal, it is graded 2; if the undifferentiated cells form about three-fourths and the differentiated about one-fourth, it is graded 3, and if there is little or no tendency toward cell differentiation, it is graded 4. The number of mitotic figures and the number of cells with single, large, deeply staining nuclei, play an important part in the grading. Clinical application of this method of grading has shown that those epitheliomas in grade 1 are indolent in growth, tend to remain localized lesions without an early tendency to metastasize, and possess little tendency to recur after removal, whereas those in grade 4 are rapid in growth, extend locally, metastasize at an early age, and tend to recur after most radical removal.

In the correlation of the microscopic grading and post-operative results in several thousand patients treated, Broders has shown that excision of epitheliomas showing malignancy of grades 1 and 2 is accompanied by a high percentage of cures, while those of grades 3 and 4 frequently recur within five years following radical excision. Broders' contribution marks a most important advance in correlating the science of pathology with the art of surgery. Determination of the degree of malignancy of a given tumor by examination of the fresh tissue, obtained by non-operative methods before operation, or obtained during operation, helps in determining the justifiable magnitude of operation and a relative prognosis. The application of this or other means of determining the degree of malignancy makes possible the standardization of methods of treating malignant lesions and of judging the relative merit of various forms of treatment for the different types of malignant disease.

NECROPSY

Supplementing diagnostic ability, presenting methods of measuring degrees of malignancy, and supplying a means of relative prognosis, the clinical pathologist has come to occupy a permanent position in relation to the most efficient practice of surgery. However, in order that errors in surgical judgment may be minimized, causes of failure of technical procedures recognized, and causes of death ascertained, necropsy examinations are essential after all surgical deaths. Too often such examination is looked on merely as a means of determining the cause of death. In view of the gross inaccuracy of vital statistics, this is just cause for necropsy, but in order that the surgeon may improve his diagnostic and surgical judgment he must seek the exposition of his errors of omission or commission, which can be obtained only in the carefully conducted necropsy. Inasmuch as but a small proportion of post-operative fatalities are coroners' cases, it is possible to obtain necropsy only through appeal. The frequency with which consent for necropsy examination is obtained is usually directly dependent on the sincerity of the desire for such examination. The surgeon who has exercised his best diagnostic and surgical judgment and operated in perfect sincerity and with confidence of a favorable result, possesses sufficient temerity not only passively to allow necropsy but sincerely to desire and actively seek it. His efforts are usually fruitful. Wilson has shown that as the value of necropsies to the progress of surgery became apparent, post-mortem examinations at the Mayo Clinic increased from 22 per cent in 1904 to 95 per cent in 1915, an average of about 85 per cent having been maintained since then.

Necropsy not only discloses causes of death and facts by which surgical judgment may be enhanced, but often shows that certain important features of disease, perhaps not recognized by clinical examination or surgical exploration, have been contributory causes of death. Furthermore, it often discloses a remote distribution of the primary disease which may be impossible to determine clinically or by exploration. The surgeon who welcomes necropsy will profit by what he sees, his perspective of disease will be broadened, his diagnostic and surgical judgment

ripened, and an opportunity to measure his surgical limitations afforded.

The necropsy pathologist may contribute to a better selection of patients for operation, a reduction in mortality rate, and a reduction in post-operative complications, if he has the opportunity to present the complete picture of all tangible morbid processes at formal pathologic conferences attended by all physicians associated in the care of the patient. The presentation of the case history, clinical diagnosis, operative procedure, post-operative course, and necropsy findings leads to an otherwise unobtainable perspective of disease, and affords opportunity for complete correlation of clinical, operative, and post-mortem findings. Criticism by the necropsy pathologist of the judgment exercised in technical procedures and subsequent management in their relation to anatomic findings at necropsy, not directed as a personal attack but in a friendly, impersonal, not undebatable manner, is received by the surgeon and clinician in the same spirit, and may contribute to the enhancement of service and to the benefit of mankind.

SUMMARY

The investigation of the end-results of disease by Hunter and the physicians of his time gave impetus to the scientific investigation of disease. With the advance in the art of surgery there has been a parallel advance in the science of pathology, although in the early years of development the two were but remotely related. The extension of vision by the lens has cemented their union until the clinical pathologist has become indispensable to the progress of surgery. The necropsy pathologist will continue to correlate clinical, operative, and anatomic findings, seeking the truth, so that surgical deaths shall not have been in vain.

MANAGEMENT AND TREATMENT OF BURNS

By H. J. RING, M. D., *Ferndale*

I HAVE tried all the standard treatments and about every new method for the treatment of burns presented to the profession during the last forty years, as opportunity offered, with the result that I have finally adopted a certain way or method of handling all burns of every degree of severity, and I now obtain uniformly good results in every patient where a cure is possible. The principles to be observed in all burns of every degree are as follows:

1. To overcome and relieve the pain as quickly as possible.
2. The immediate application of a permanent dressing.
3. A permanent dressing that will preserve and conserve as much injured tissue and skin as possible, and overcome the shock from the injury.
4. Dressings that are removable and that may be renewed without pain or injury.
5. Dressings that will prevent sloughing, pus formation, and bad odors.
6. Early restoration of function without defects.
7. Due consideration of cosmetic effects.

All these principles are covered by just two varieties of dressings, both simple and effective and ever ready at hand, as needed at either home or hospital. The first and immediate dressing to be used is a paste of bicarbonate of soda (either chemically pure or the commercial kitchen brands) with cooled, boiled water, applied directly to cover the entire burned area and made to stay with gauze or bandages saturated with the same paste. More paste is then applied over the bandages to make a complete thick, moist layer over the entire injured surface. The parts are then covered with a light towel wet with a saturated solution of the same soda, and finally the whole is enclosed in oiled muslin or oiled silk, with just sufficient bandages to retain all the dressing in place. The oiled silk or muslin covering should be opened at regular intervals and the dressings again saturated with cold saturated solution of the bicarbonate of soda, always properly prepared. The dressings must be kept moist to prevent the soda from drying and caking. The paste dressings are renewed once a day, employing a saturated solution to remove any cake or crusted soda, and using care not to wash or disturb the injured skin blisters or other tissue. The second and subsequent dressings are made, applied and kept moist, as described for the first one. These dressings should be continued, with daily renewals, for at least four or five days in every case, and in deeper burns until beginning separation of the destroyed tissue. The first dressing quickly relieves the pain and overcomes shock. Its continuous application acts to conserve and restore injured skin and other tissue, prevents the acid fermentative processes present with other dressings in the separation of destroyed tissue, thereby also preventing fever, bad odors, pus formation, and infection. Blisters must never be opened because, if left alone, skin formation will take place under every dried blister and thus diminish the danger of scarring. Should blisters break, continue the soda dressings until the old skin flattens to the level of normal skin and until beginning separation of destroyed tissue in the deeper burns when it may be discontinued and the second permanent dressing applied, which is a simple ointment, as follows:

℞ Bismuth Subnit ℥iv; Ung. Zinci Oxid. ℥v; ft. Ung. (This oxide must always be prepared from benzoinated lard, never from vaseline.)

Sig: Apply direct to the skin, open sores, or denuded surfaces, or on gauze, to completely cover all parts affected. It may be renewed once or twice daily, without removing what may be adhering to skin or other parts, but adding fresh or new to keep all involved parts constantly covered. In case of painful, irritable deep sores at the time of separation of dead tissue, the addition of from one to two grains of sulphate of morphia to every two ounces of ointment, according to age of patient, will give entire relief and should be discontinued after a few days' use. This dressing prevents pus formation, serous oozings, and bad odors. It is clean and very comfortable to the patient, allows free movements of parts, and produces the best possible restoration of function and cosmetic effects, without adhesions or contractions, and must be continued until good, healthy, strong skin again covers the area affected. Oiled silk or muslin should be used outside of the other dressings until all sores are entirely healed. In

case of too prolific or redundant granulations in deep burns over large areas, apply a little of a 20 per cent solution of argyrol when renewing dressings, once a day or every other day as may seem necessary, and with this dressing you will rarely need to resort to skin grafting, even on extensive raw open surfaces.

MORTALITY RATES OF CARCINOMA OF THE UTERUS IN CALIFORNIA

By Alfred Baker Spalding, M. D., *San Francisco*

In California, with an annual total number of deaths of from 52,000 to 54,000, it has been found that the total cancer mortality averages about 8½ per cent, which means an annual cancer death rate in the neighborhood of 4500.

It does not seem probable that cancer starts from a single cell, but rather that simultaneously many cells in a particular upset environment develop about the same time malignant characteristics.

Discussion *by Frank W. Lynch, San Francisco.*

OUR ideas on the incidence and the mortality rates for cancer are based at present upon statistics gathered by various boards of health, by some hospitals, and by life insurance companies. The gathering of these statistics is an exceedingly complicated matter and calls for much expert understanding. Not until recently have any satisfactory figures been published. These corrected statistics have come chiefly from the larger insurance companies. At first glance it appears that malignancy is becoming alarmingly more frequent and some conscientious statisticians believe that cancer is increasing at the rate of 2 per cent a year. This impression is due in part to the fact that the older statistics report that only about forty individuals per hundred thousand died annually from the disease, while now many cities report over 100 annual cancer deaths per 100,000 population. In the United States the registration area for vital statistics is quite extensive and is most conscientiously supervised. Still, it suffers from unavoidable errors incident to the various factors which cause a physician to render, at times, an incorrect certificate as to the cause of death. Even with our own limited experience, we know of patients who have died of carcinoma of the uterus whose certificates of death state, with truth, that they died of heart disease or of an accident.

In California, with an annual total number of deaths of from 52,000 to 54,000, it has been found that the total cancer mortality averages about 8½ per cent, which means an annual cancer death rate in the neighborhood of 4500. Of these cancer deaths, the genital organs furnish 14½ per cent.

San Francisco presents an unique situation, in that it ranks highest in cancer deaths by a very wide margin, rating 132 annual cancer deaths per 100,000 population, while the combined average of nine other cities of the United States is only 104 per 100,000. Los Angeles ranks seventh, with a rate of 102 per 100,000 population. Due to this fact, San Francisco has been selected as a city that would prove interesting for cancer research and through the Hoffman Survey, the San Francisco Board of Health is now getting ready to carry out this work along very elaborate and comprehensive lines.

Doctor Frederick L. Hoffman has requested that the local medical profession assist him in a San Francisco cancer survey, by replying to a questionnaire regarding every cancer patient under treatment during the year 1924. These questionnaires are somewhat extensive, and will require considerable careful work on the part of the attending physician, but the result to be obtained is so important that we all should be more than willing to assist in this work.

To me, it does not seem probable that cancer starts from a single cell but rather that simultaneously many cells in a particularly upset environment develop about the same malignant characteristics. Just how long it takes for these few malignant cells to develop a noticeable cancer tumor that is histologically characteristic and produces symptoms noticed by the patient is unfortunately an unknown factor. Possibly what we speak of at the present time as a pre-cancerous stage is this early stage of cancer development. The duration of the disease from the onset of noticeable symptoms, such as hemorrhage, to the death of the patient is better known. While the course of the disease may, in one case, be very slow and in other cases very rapid, the usual time noted is somewhere in the neighborhood of two years. That has been our experience at Stanford, with a few cases observed where no treatment for the cancer had been carried out.

The patient is certainly fortunate who has a microscopical diagnosis of early carcinoma of the uterus, but the patient who comes for treatment a year after symptoms develop or who has been subjected to improper and incomplete surgery, with all the visible evidence of ulcer formation, or, still worse, cancer recurrence, is, in our experience, in a practically hopeless condition, so far as cure is concerned. So far-reaching is this that it seems justifiable and ethical to inform women over 30 years of age of the importance for routine pelvic examination at reasonable intervals, even though no symptoms exist.

Pinch very justly deprecates the statement at times appearing in the lay press that radium and other forms of radiation therapy are a failure and suggests that the term "cure" for advanced cancer cases be changed to "arrest of disease." Radiation therapy is an invaluable addition to our armamentarium for the care of the cancer patient. It is undoubtedly curative when used early enough, and frequently patients with advanced cancer have lived in comparative comfort after such treatment when all other resources of medicine and surgery had been exhausted. However, the only cures I have to report have been obtained with patients operated upon early by radical complete hysterectomy, in some cases aided by radium or x-ray either before or after operation. In the early stage of the disease, with this form of treatment I have 31.2 per cent of cures without recurrence in from three to seven years, with a series of thirty-two patients. The immediate operation death following hysterectomy was six, or a mortality of 19 per cent. This is somewhat higher than that usually reported, and is due in part to the inexperience of early clinic years. The last immediate mortality following hysterectomy was on March 1, 1918. During the past six years we have

had at Lane Hospital no immediate fatalities which can probably be accounted for by better staff organization and improved technique. With no other form of treatment have we succeeded in curing a patient for three or more years that ultimately did not die or have a recurrence, although we have two of forty-two radium-treated patients alive and free from recurrence since 1921, as against two of seven patients treated by operation alive and free from recurrence for the same length of time.

My present preference in choosing a method for treating the early case of carcinoma of the uterus is to treat the patient with radium and x-ray before operation; in about five weeks to do a radical hysterectomy with removal of parametrium and to avoid post-operative radiation, except for the treatment of recurrence. All suspected cancer patients are subjected to a diagnostic curetage and excision of cervix specimen, inserting 100 mg. of radium while awaiting a frozen section diagnosis. If found malignant, the radium is left in the uterus from twenty to thirty hours. The radiation department advise in each case as to the need of deep x-ray therapy. When deep x-ray therapy is used, we usually divide the treatment into two stages, with one-day interval. In an average case, the factors are approximately as follows: With a target skin distance of 50 cm., 300 to 450 milliamperes minutes

CANCER OF UTERUS

CHART I

	Body 16							Cervix 95							Body and Cervix 7						
		August, 1912, to April, 1921													April, 1921, to April, 1924						
			Av.	Stage			Auxiliary			Av.	Stage			Auxiliary							
Treatment	No.	Av. Age	1	2	3	Rad.	X-ray	No.	Av. Age	1	2	3	Rad.	X-ray	No.	Av. Age	1	2	3	Rad.	X-ray
Abd. Hysterectomy	32	47	20	8	4	11	2	7	48	1	4	2	7	6							
Radiation	16	45	3	6	7	16	1	42	48	3	9	30	40	29							
Pac. Cautery	8	48	0	3	5	1	0	0	0	0	0	0	0	0							
Percy Cautery	3	44	0	0	3	1	0	1	48	0	0	1	1	0							
Vag. Hysterectomy	1	39	0	1	0	0	0	0	0	0	0	0	0	0							
Untreated	6	51	1	0	5	0	0	1	41	0	0	1	0	0							
Total	66	45	24	18	24	29	3	51	46	4	13	34	48	35							
	34% operable; 50% had Hysterectomy							8% operable; 15% had Hysterectomy													
Series Total	117	45	28	31	58	77	38	117	45	28	31	58	77	38							
	24% operable; 34% had Hysterectomy																				

CANCER OF UTERUS

CHART II

	August, 1912, to April, 1921					April, 1921, to April, 1924				
Treatment	No.	Operative Mortal.	Total Dead	Aver. Cancer Life Months	Living with Recur.	No.	Operative Mortal.	Total Dead	Aver. Cancer Life Months	Living with Recur.
Abd. Hysterectomy	32	6	18	41	1	7	0	2	15	1
Radiation	16	0	10	20	2	42	1	15	21	11
Pac. Cautery	8	0	6	19	0	0	0	0	?	0
Percy Cautery	3	0	2	12	1	1	0	1	24	0
Vag. Hysterectomy	1	0	1	20	0	0	0	0	?	0
Untreated	6	0	5	31	1	1	0	1	17	0
Total	66	6	42	24	5	51	1	19	19	12

Of 66 cases in the first group: Immediate mortality from Hysterectomy, 19 per cent. One patient died 6 years and 2 months after Hysterectomy. One patient is living with recurrence 4 years and 8 months.

CANCER OF UTERUS

CHART III

	Apparent Cure at Last Visit August, 1912, to April, 1921									April, 1921, to April, 1924				
		No.	Number of years after operation								No.	No. yrs. after oper.		
Treatment	No.	Cured	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	6 yr.	7 yr.	No.	Cured	1 yr.	2 yr.	3 yr.
Abd. Hysterectomy	32	13	3	0	2	3	1	1	3	7	4	2	2	0
Radiation	16	4	4	0	0	0	0	0	0	42	16	14	2	0
Pac. Cautery	8	2	2	0	0	0	0	0	0	0	0	0	0	0
Percy Cautery	3	0	0	0	0	0	0	0	0	1	0	0	0	0
Vag. Hysterectomy	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Untreated	6	0	0	0	0	0	0	0	0	1	0	0	0	0
Total	66	19	9	0	2	3	1	1	3	51	20	16	4	0

Thirty-two Hysterectomies gave 3 to 7 years cures in 31.2 per cent. Thirteen Hysterectomies had radium as auxiliary. Six were carcinoma of cervix. One was carcinoma of body.

are given through a round port 25 cm. in diameter centered over the front of the pelvis, a ¾ mm. copper filter and 200,000 volts being used. On the following day a similar port is radiated over the back.

The accompanying charts state graphically my private and clinical experience with the 117 cases of cancer of the uterus treated from August, 1912, to April, 1924. With the patients treated before 1921, 71 per cent either died or had recurrence. Fifteen per cent were without recurrence from three to seven years, while 14 per cent were without recurrence so long as traced, being lost track of, however, before the three-year period was reached. Fifty per cent were operated upon, of whom 31.2 per cent were cured and 19 per cent died as a result of operation. Since 1921, radium and deep x-ray has been used more extensively, and only 15 per cent of the patients have been operated upon. The time is too short to judge fairly the comparative value of radiation versus operation, and the problem is more complicated because since using radium and deep x-ray therapy, although more patients are being received for treatment, a much larger percentage of the patients show advanced cancer growth. Of twenty-five patients dead after radiation treatment, the life duration was less than with twenty patients dead after operation. However, of the twenty-five patients dead after radiation, one died of an accident, one of a heart lesion, five had had incomplete operations by outside doctors before radiation treatment, and two died following hysterectomy by their family physicians after radium.

The prognosis for early cancer of the uterus is so good and a fatal outcome for advanced carcinoma of the uterus, regardless of treatment, is so sure that the greatest hope for reducing the apparently increasing cancer death rate seems to lie in more frequent routine examinations by the family physician, the prevention and eradication where possible of all local and general irritations, the earliest possible pathological diagnosis in suspicious cases and in proven cases, the pre-operative use of radium and deep x-ray followed in a few weeks by complete radical removal of the uterus and parametrium.

Stanford University Hospital.

DISCUSSION

FRANK W. LYNCH, M. D. (University of California Hospital, San Francisco)—I believe that a statement of some of my findings would be of interest in connection with Doctor Spalding's paper, because, first, my observations agree absolutely with his and secondly, because the tables from our respective clinics undoubtedly represent a very considerable proportion of the uterine cancers in San Francisco during the period covered.

Since July, 1915, I have treated 218 patients for carcinoma of the uterus, but, for present purposes, will exclude all the cases that were neither radiated nor operated. We will begin our series in March, 1916, when I did the first radical operation in the present group. Between that time and October, 1923, I have treated 168 uterine cancers by operation or radium or in combination. The series should be closed January, 1920, to permit a study of cures, since I cannot discuss any case that has stood less than five years from the standpoint of cure. Our series, however, is so small that it probably will never be large enough to permit the discussion of the broad question of cures.

The chief trouble with small series is that a few unusual cases give false values. Ours may well suffer from such a reason. Yet few may ever hope to present a series as large and well controlled as Wertheim's unsurpassed group of 1500. Our material presents 168 cases divided as follows:

TABLE I

148 carcinoma uterine cervix, 114 no previous operation for cancer, 34 operated for cancer by others, sent in for post-operative radiation.
20 carcinoma uterine fundus.

CARCINOMA OF UTERINE CERVIX

TABLE II

Primarily operable, 30 (26 per cent of 114).
Refused operation, 2.
Operation contra-indicated, 5.
Operated by radical method, the majority with pre-operative or post-operative radiation, 23.
(Four deaths—17 1/3 per cent.)
Radiated only, 7.

TABLE III

Operated between March, 1916, and Dec. 31, 1920, 19.
Died from operation, 4.
Died from cancer, 4, at 9 months, 1 year, 1 year, 3½ years.
Died from intercurrent disease, apparently free from cancer (no autopsy), 2. One stroke at year, 1 pneumonia at 5 years.
Lost, 4, but well at 2, 2½, 3 and 3 years after operation.
Living and well, 5, at 3, 4, 5, 5½ and 7 years after operation.

Four cases of the nineteen were known to have been clinically well at least five years (21 per cent). Nine of the nineteen were well for a minimum of three years: one dying later from cancer; one at five years from pneumonia; two have been lost; and two are still short of a five-year period of observation.

TABLE IV

Operable cases radiated only, 7.
Deaths from treatment, 0.
Died from heart attack, symptom free from cancer, 1, at one year.
Died from cancer, 3, at 3, 3, and 3½ years after treatment.
Clinically well, 3, at 3, 4¾ and 5 years after treatment.

TABLE V

Inoperable cervical carcinoma, made operable by radium, 4 living at 1 year with recurrence; 22 months, with recurrence; 2 years and 5½ years.

The first two were operated when the growth appeared to be recurring, since it did not again respond to radium. The last two were operated while the growth appeared to have been controlled by radium.

TABLE VI

Inoperable cervical carcinoma radiated only, 80.
Lost, 2.
Dead, 64; 44 in first year, 9 in second year, 4 in third year, 7 in fourth year.
Living, 14; 7 less than 2 years, 3 in third year; 3 in fourth year; 1 in fifth year.

TABLE VII

Cancer of cervix operated elsewhere, radiated by me, 34.
Living, 5, at 1 year, 2½ years, 3 years, 3½ years, 5 years.
Dead, 29, 4 only lived more than 2 and less than 3½ years.

CARCINOMA OF UTERINE FUNDUS

TABLE VIII

Carcinoma of uterine fundus, 20.
Operated radically, 9.
Operative death, 1.
Dead from disease, 1, in 6 years.
Lost track of 2, both well at 1 year.
Living with recurrence, 2, at 1 and 2 years.
Living and well, 2, at 3 and 7 years.

REPORT OF RESULTS OF INSULIN TREATMENT IN A CASE OF PREGNANCY COMPLICATED BY DIABETES MELLITUS AND FUNNEL PELVIS.

By LINDSAY PETERS, M. D., *Alameda, California*

ALTHOUGH diabetes mellitus is a widespread affliction, its occurrence as a complication of pregnancy is rare, because diabetic women are generally infertile (Lublin). In the statistics of Van Noorden, pregnancy occurred in only 5 per cent of 427 diabetic women of child-bearing age.

When, however, true diabetes mellitus does occur during pregnancy, either as a new development or as a condition antedating the pregnancy, its effects are very often disastrous either for the mother or the child, or both. Although in a certain proportion of cases the child is carried to or near term without serious results, in the majority of cases the disease is aggravated by pregnancy, and commonly results in coma and death. In 1908, Offergeld collected sixty-three cases from the literature where diabetes complicated pregnancy. Of these patients, 30 per cent died in coma, and 66 per cent of the children died. Thus, before the era of insulin, death of the mother and the fetus in utero were quite common, and when the child was born alive it was apt to be premature and puny and sometimes hydrocephalic or affected with congenital diabetes. Hydramnios is a frequent complication, which results in death or premature birth of the infant. De Lee, while pointing out that "insulin will enable us to tide diabetics along in pregnancy until the child is viable, it will help the patient to withstand the effects of labor (used prophylactically), and it is a positive aid in diabetic coma," cautions, nevertheless, that "one must not expect too much from it, because certain cases of diabetes are aggravated by the pregnancy and will not clear up until the pregnancy is removed." He advises that, on account of the need of experience, all cases of pregnancy diabetes should be put on record, especially those treated with insulin.

I have been able to find in the literature only three reported cases in which insulin was used to combat diabetes complicating pregnancy: Wiener reports a case, with hydramnios, in which the child was stillborn, but the mother's life was saved by the use of insulin. Reveno reports a case of diabetic coma in pregnancy in which, with insulin treatment, the mother recovered, but the premature infant died after sixteen hours.

Ambard et al. observed "a woman, aged 35, with grave diabetes, who gave birth (eighth month) to an infant with diabetes (12 gm. sugar per liter of urine). The mother died in a few hours, the child after twenty-three hours. Necropsy showed lesions in the maternal and in the fetal pancreas. Evidently, the diabetes developed in the woman because the pancreas deficiency was not compensated by the affected fetal pancreas. The fatal outcome, after hyperglycemia had disappeared under insulin treatment, is ascribed by Ambard and his co-workers to lesions of the liver and kidneys, caused by transient acidosis."—Abstract in Journal A. M. A., June 6, 1925, vol. 84, par. 1786.

The case here reported illustrates the beneficent effect of insulin in a diabetic patient who had previously lost a child at six months in a pregnancy complicated by hydramnios, but, incidentally, it is also of interest as a striking example of marked contraction of the outlet of the bony pelvis in which a combination of favorable circumstances resulted in spontaneous delivery of a living, healthy child. Notwithstanding these two serious complications, either one of which gave grounds for anticipation of grave trouble, the pregnancy, labor, and lactation were exceptionally free from difficulty.

Mrs. M., aged 22 years, came to me February 24, 1924, in the fifth month of pregnancy. She had scarlet fever in early childhood, typhoid fever when about 12 years old, and during later girlhood her mother, thinking she had "drinking diabetes," had her urine examined, and this was reported negative.

There was nothing else of interest in her past history, except that she married in April, 1921, and in July, 1923, when 6½ months advanced in pregnancy, she gave birth to a dead child, which caused a considerable laceration. The stillbirth was said to have been due to "excess of fluid" (hydramnios).

The only things noteworthy in connection with the present pregnancy are that the last menstruation occurred October 10, 1923, and during the past three or four months there had been leucorrhoea, accompanied by soreness and itching of the vulva.

The outstanding findings on physical examination were: Fundus uteri at umbilicus; marked vulvitis, with profuse purulent discharge; large amount of sugar in the urine; pronounced funnel pelvis, with measurements as follows: Interspinous, 21.25 cm.; intercristal, 27.5 cm.; bitrochanteric, 31 cm.; Baudeloque's diameter, 19 cm.; bisischial, 6.5 cm.; posterior sagittal, 8.5 cm. Diagonal conjugate not measured because of inability to reach the sacral promontory.

According to Williams, a bisischial diameter of 6.5 cm., with a posterior sagittal diameter not exceeding 8.5 cm., renders spontaneous delivery at term highly improbable.

By restricting the carbohydrates in the diet to a minimum, the sugar in the urine was much reduced in quantity and this, together with douches and local use of zinc oxide ointment, promptly eliminated the vulvitis, with its attendant itching. However, it was found impossible to maintain the patient's strength on the diet which was necessary to keep the sugar output small, so that on March 22, 1924, the use of insulin was begun. It was found that for a maintenance diet, 10 units three times a day, half an hour before meals, was required. This kept the patient in good condition and the urine either sugar-free or with only a trace of sugar. Insulin was continued until June 15, 1924, one month before the date calculated for maturity of the child, when labor began suddenly with severe uterine contractions at frequent intervals, attended with straining of abdominal muscles, like second-stage pains, which resulted, about four hours later, in expulsion of a female child in occipito-posterior position. During the delivery it was interesting to observe how amazingly the narrowness of the pelvic outlet was overcome by the moulding of the soft frontal bones of the premature child into the narrow cleft of the pubic arch, allowing the occiput to rotate forward over the perineum. It is evident that in this case the posterior position of the occiput was a favorable factor, allowing the frontal bones to become wedged into the narrow space between the pubic rami, with subsequent rotation of the occiput over the peri-

neum. In spite of the prematurity and small size of the child (six and one-half pounds), a moderate laceration of the perineum could not be avoided, on account of backward displacement of the head by the narrow pubic arch. Immediately after birth the head was seen to be greatly compressed laterally in its anterior portion, giving it a wedge shape. The soft tissues overlying the frontal region were purple from ecchymosis, due to severe pressure to which it had been subjected by the narrow pubic arch. The shape of the skull rapidly regained its normal contour and color, and the child thrived, being now apparently normal in all respects, although, owing to hypersensitiveness of the mother on the subject, I have not been able to obtain a specimen of the baby's urine for examination.

The mother had a normal convalescence, and has nursed her baby for nine months. After delivery it was found possible to keep the urine almost free from sugar by means of a restricted, low carbohydrate diet, without the use of insulin, but after about two months it became evident that the patient was undernourished and deficient in strenth, so while on a visit to Canada, she, of her own accord, resumed the use of insulin, taking 20 units once daily and increasing the amount of carbohydrates in the diet. She rapidly became strong, gained weight, the skin had a good color, and she appeared and felt herself to be in perfect health. However, on February 17, 1925, she consulted me on account of a return of vulvitis, such as she had when she first came to me. She confessed to having substituted ordinary bread for gluten bread in her diet some time previously, but claimed that urine tests made daily showed no sugar present. She was catheterized at the office and the urine was found heavily loaded with sugar.

A laboratory test on March 7, 1925, showed: Glucose, 7.1 per cent; phenylhydrazine test positive for glucose; blood sugar, 374 mgms. per 100 cc. The specimen for blood-sugar test was taken four hours after breakfast, before which 8 units of insulin were taken. The blood sugar should have reached its lowest point at this time.

The laboratory report makes it clear that we were dealing with true diabetes mellitus, and not lactosuria, alimentary glycosuria, nor the so-called renal diabetes which are frequently found in the gravid state.

In summary the case shows:

1. That in a patient who had hydramnios and a premature stillbirth in her first pregnancy, by the aid of insulin it was possible to carry her through a subsequent pregnancy to near term and for her to nurse her child without physical detriment.

2. That with high degree of contraction of the pelvic outlet spontaneous delivery of a premature but vigorous child, in occipito-posterior position, occurred.

We are receiving many compliments on the Medical and Surgical "Conversaziones." Several new ones are being started. If you want to take part in them, tell the editor about it.

TREATMENT OF ACNE VULGARIS

By Ernest K. Stratton, M.D., *San Francisco*
(From the Department of Dermatology and Syphilology, Stanford University Medical School)

X-ray is the best therapeutic remedy we have for the permanent cure of acne vulgaris.

The pustules and subcutaneous abscesses should be cleared up surgically and with the aid of vaccines before beginning x-ray therapy.

The amount of x-ray necessary to effect a cure can be greatly reduced if the hyperkeratotic layer of the skin is first removed by peeling.

In order to avoid the serious sequelae which sometimes follow the injudicious use of the x-ray, it is a better policy never to allow the combined fractional dosage to exceed a skin erythema dose, without giving the patient at least a two-week rest period.

FOR convenience and for the purposes of this discussion, acne is presented under three group headings:

Group I includes the juvenile or the most common form of acne vulgaris; Group II, the artificial acnes, caused from both internal and external irritants, such as the ingestion of iodides and bromides and the local applications of or contaminations with the tars, oils, paraffines, etc.; and Group III, acnes of obscure etiology, which do not respond satisfactorily to local treatment, and which occur, as a rule, in individuals over 25 years of age.

Juvenile acne vulgaris, by far the most common type of the disease, comprises some 8 per cent of all skin lesions. It appears first about the age of puberty in certain individuals who have an abnormal skin, as manifested by (a) a dirty yellowish or grayish coloration, (b) by accentuation of the pilo-sebaceous pores, and (c) by a slight thickening of the integument. This kind of a skin not only furnishes the necessary substratum for acne, but associated with it is a marked increase in the sebaceous gland activity. To this whole picture Darier has given the name "kerosis," and he believes these manifestations to be closely related to sexual development, as they are especially noted at two periods of life, namely, at the time of birth, when some infants are covered with a greasy epidermic covering known as vernix caseosa, and then again at puberty, when the genital function is becoming established.

There is formed in the sebaceous follicles, under appropriate conditions, a mixture of sebum and horny cells, cylindrical in shape, whose exposed surfaces become black, not by a deposit of dust as is generally believed, but through the oxidation of the keratin, and thus we have formed the primary lesion of acne vulgaris, commonly known as the blackhead or comedone.

Comedones, in addition to acting as foreign bodies, furnish by the very nature of their composition, an excellent culture media for many bacteria. The one most constantly present is the microbacillus of Sabouraud, which is morphologically identical to the acne bacillus of Unna. Irritants thus activated cause a dilatation of the vessels in the subpapillary zone about the follicles; there is an infiltration of round cells, and the result is the formation of the papule. This process usually goes on to formation of pustules, superficial or deep, depending, as a rule, upon the virulence of the secondary

invading pyogenic organisms. The usual benign character of the suppuration, its freedom from pain and its slow development is most generally due to the non-virulent staphylococcus albus. The different lesions are often associated in the same patient, thus explaining polymorphous acne, consisting of comedones, papules, pustules and, occasionally, subcutaneous abscesses.

The treatment of this type of acne should first of all be directed to the correction of any constitutional disturbance which may play an equally important part, such as habitual constipation, dyspepsia, improper diet. Sugars and starchy foods especially should be reduced because they have a tendency to increase sebaceous secretion.

On the whole, however, the relief of acne depends essentially upon intelligent local treatment. The first step is to get rid of the pustules and subcutaneous abscesses, which is best accomplished by incising them and maintaining drainage with a hygroscopic wet dressing, preferably alkaline. A formula for a satisfactory one is 8 per cent magnesium sulphate or sodium chloride, 8 per cent sodium bicarbonate, and 4 per cent boric acid solution. While many experienced dermatologists doubt the value of vaccine therapy in acne, I believe that it is especially beneficial as an aid in clearing up the pus. The best results are obtained with the use of the stock-mixed staphylococcus vaccines. Results are disappointing, however, in other than the pustular variety, in which I administer routinely this vaccine, as well as the combined acne vaccine.

After the pustules have disappeared there still remain papules, comedones, and a thickened skin to deal with. Therefore, the next indication is to get rid of the thickened skin; this is accomplished by peeling. There are many remedies for the purpose, and they can be incorporated in ointments, pastes, or lotions. Lotions are cleaner, and one consisting of 2 grains of bichloride of mercury, 2½ drams each of salicylic acid and camphor in 3 ounces of alcohol, if applied twice daily after the skin is scrubbed thoroughly with soap and warm water, will cause the removal of the hyperkeratotic condition in from four to seven days.

The skin is then ready for x-ray therapy, and a surprisingly small quantity of it is needed to clear up the papules after the skin is first prepared as indicated. Begin with 10 per cent of an erythema-producing dose and give five weekly treatments, increasing the dosage 5 per cent each week. This is an effective, as well as a safe method of treatment. In the aggregate, such intermittent dosage does not exceed a single skin erythema-producing dose. Should the trouble prove recalcitrant, however, the roentgen treatment can be repeated after an interval of two weeks.

The comedones, which are the only remaining lesions to be dealt with, should be removed mechanically at least once a week by means of a Bronson curette, and followed after one month by .5 to .75 of a skin unit of unfiltered x-ray. This causes an atrophy of the sebaceous glands, and with the diminished output of sebum the comedones will disappear. Lotio alba or boric acid in alcohol is useful locally during the treatment of the papules and comedones.

The scalp should receive attention from the beginning, as it usually presents an oily pityriasis which may be controlled with a 10 per cent sulphur and 5 per cent salicylic acid ointment, together with thorough shampooing. The result is practically permanent, the patient never having more than an occasional isolated lesion thereafter.

Artificial acnes, resulting from the ingestion of large quantities of bromides and iodides, may appear in the usual acne areas. The bromide eruption usually consists of rather large crusted papulo-pustules, which are easily recognized. The iodides, however, cause many small follicular papulo-pustules, sometimes closely resembling a true acne, but the fact that the lesions are all of the same type and not associated with comedones or a seborrhoea indicates inquiry as to possible drug ingestion. Drug eruptions are probably due to the irritation produced during the process of excretion of these chemicals through the sebaceous follicles. The treatment naturally demands the withdrawal of the causative agents. Locally, mild antiseptic lotions are useful, and the intravenous injection of normal salt solution will sometimes hasten their elimination.

The artificial acnes, resulting from various local agents, are produced by the mechanical occlusion of the follicular orifices. Workers in tar, oils, particularly paraffin oil, are prone to develop this type. The lesions may occur anywhere on the body. The treatment consists of thoroughly scrubbing the part with soap and water, the application of a mild antiseptic and soothing paste, and by protecting the skin from future exposures.

Finally, there is a group of acnes in which the cause is difficult to locate. Fortunately, they are not as numerous as are the other types, but after having treated some of them locally, as hereinbefore outlined, for periods of several weeks without obtaining the desired results, and then seeing them clear up immediately on the removal of an infected ovary, appendix, tonsils or teeth, I then realized that, even in their beginnings, they had not presented the classical picture of acne vulgaris. Such atypical acne is seen, as a rule, in women over 25 years of age. Usually the eruption is more or less limited in extent, and either localized on the chin—a very favorite site—or to circumscribed areas on both cheeks. These patients require certain aid by local treatment, but I believe their permanent cure depends on the removal of focal infections, endocrine imbalance or some other chronic condition which may be causing a reflex flushing of the face, follicular congestion and atony of the skin, all of which finally lead to seborrhoea, the formation of comedones, and ultimately to the development of acne lesions.

CONCLUSIONS

1. X-ray is the best therapeutic remedy we have for the permanent cure of acne vulgaris.

2. The pustules and subcutaneous abscesses should be cleared up surgically and with the aid of vaccines before beginning x-ray therapy.

3. The amount of x-ray necessary to effect a cure can be greatly reduced, if the hyperkeratotic layer of the skin is first removed by peeling.

4. In order to avoid the serious sequelae which

sometimes follow the injudicious use of the x-ray, it is a better policy never to allow the combined fractional dosage to exceed a skin erythema dose without giving the patient at least a two-week rest period.

490 Post Street.

SOME PROBLEMS IN THE MANAGEMENT OF TUMORS OF THE URINARY BLADDER

By PAUL A. FERRIER, M. D., *Pasadena*

Papillomas should be fulgurated.

Malignant papillomas should be given a trial with fulguration and radium implantation through the cystoscope.

Papillomas which do not respond to the above procedure, multiple or extensive papillomas, those around the bladder neck, cases with uncontrollable bleeding or intolerant to cystoscopy should be treated by open operation.

Small cancers, favorably located, should have a cautery excision with meticulous care to avoid implants.

Multiple cancers confined to the bladder, especially if they involve the sphincter, call for total cystectomy.

Radium alone implanted through the cystoscope has had many apparent cures and is worthy of further trial in the hands of those who are prepared to implant needles accurately throughout the growth.

Deep x-ray should cover the regional lymph nodes in every cancer of the bladder.

Manifestly hopeless cases should not be tortured by ineffective measures. Cystostomy, nephrostomy or nothing.

Large cancers, having a reasonable amount of normal bladder and sphincter and one uninvolved meatus, should be removed by diathermy, followed by implantation of radium needles, through every cubic centimeter of tumor base, screened radium topically, supplemented by deep x-ray therapy of the regional lymph nodes. This method should supplant extensive resections and is, I believe, the greatest recent advance in the treatment of extensive cancers of the bladder.

DISCUSSION *by Wirt B. Dakin, Los Angeles; Granville MacGowan, Los Angeles; R. L. Rigdon, San Francisco; Frank Hinman, San Francisco.*

GREAT advances have been made in the treatment of tumors of the urinary bladder—fulguration, radium, improved operative technique, deep x-ray therapy, diathermy. This discussion is an attempt to evaluate available therapeutic procedures in the light of pathology and accumulated clinical data, so that the best procedure may be adopted for each individual case.

The etiology is unknown. Analine workers show a higher incidence. Maude Hamilton attributes this to arsenic. Extrophic bladders are more liable to cancer, probably from embryologic fault. Chronic irritation from stone or infection does not seem to play a part.

We adopt Geraghty's classification:

Epithelial	Papilloma	Benign
		Malignant
	Adenoma	
	Cysts	
	Carcinoma	Papillary
		Squamous
		Schirrous
		Adeno
Connective Tissue	Sarcoma	
	Myxoma	
	Fibromyoma	
	Fibroma	
	Angioma	
Muscles	Myoma	
Heterotopic	Rhabdomyoma	
	Hydatic cysts	
	Dermoid cysts	
	Chondroma	
	Cholesteatoma	

Granulomas and syphilomas must be excluded. Also a villous disease in which delicate streamers arise without pedicle directly from the mucosa. It has been associated with tuberculosis, has been cured by curettage, and is evidently inflammatory.

Epithelial tumors comprise nine-tenths of bladder neoplasms. The great majority of these are papillary or schirrous. Adeno-carcinoma and squamous cell carcinoma are rare and malignant. All are familiar with the difficulty in determining the malignancy of papillary tumors by microscopic diagnosis. Structurally the benign papilloma consists of blood vessels in a branching fibrous stroma, covered with several layers of long-processed, oval, regularly arranged cells, surfaced with normal transitional bladder epithelium. Any irregularity in the size, shape, staining qualities of these cells, the presence of multi-nucleated cells, numerous mitoses with nuclei rich in chromatin, are signs of malignancy, even without a break in the basement membrane. From the fact that ten areas from a tumor may be normal and the eleventh show such a picture, the pathologist's difficulty is obvious. So much so that clinical and cystoscopic data are often more reliable.

The following characters indicate malignancy:

1. A fusing or clubbing or tendency to ulcerate of the papillary projections.
2. Edema, dilated vessels, velvety patches or submucous nodules about the margin.
3. A sessile, lobulated, fissured or ulcerated tumor.
4. Very large or multiple involvement with necrosis and urinary incrustation.
5. Infiltration of the bladder wall, demonstrable by vaginal or rectal palpation or cystogram with air or opaque medium.
6. An intractable cystitis in the presence of tumor.
7. A poor response to fulguration.
8. Metastasis.
9. Finally, microscopic diagnosis of passed or excised tissue.

Metastasis is generally late. Extensive involvement may be found at autopsy, as in two of this series, without demonstrable metastasis. On the other hand, Geraghty reports four cases which showed distant metastases before the bladder wall was involved. The sacral glands are usually first involved, but the bones may suffer early, as in cancer of the prostate. Lower reports metastasis to the brain. Tumors of the anterior wall are more likely to recur than those of the base. Extension to the vesicles and prostate is early, but other extension is usually late.

All papillomas sooner or later become malignant. They may exist innocently for twenty-five years or show malignant histology for years, without infil-

trating the bladder wall. They may be removed and recur as benign or malignant and still not infiltrate the bladder wall. Reference must be made to the extraordinary difference in malignancy of tumors which may show identical histology. Indolent tumors may for no known reason acquire great malignancy.

SYMPTOMS

Hematuria is the warning in nearly all cases. Painless terminal hematuria is particularly suggestive. Casper states that in only three of 142 patients seen soon after the initial hematuria was the tumor large. The duration of symptoms in 181 cases coming to the Mayo Clinic averaged twenty-six months. Sixty-two cases reported by Thomas ranged from two weeks to twenty-five years, while symptoms had been present in seventy-five cases of Caulk for an average of ten years. Frequency and pain are generally late symptoms. It is plain, therefore, that one of the greatest problems in the management of tumors of the bladder is to induce the family doctor and the patient to regard every hematuria as an indication for an immediate diagnosis.

TREATMENT

Benign papillomas, and those in which malignant degeneration has not invaded the pedicle or bladder wall should be fulgurated through the cystoscope.

The following case illustrates the type:

B. R. W. Male, aged 50, referred by Doctor Heddens. For three months he has had slight irritability of the bladder with blood at the end of urination. Cystoscopic examination showed a definite pedunculated raspberry tumor 2.5 cm. in diameter, just back of the right meatus. No necrosis; normal mucosa about the base. Fulguration twice with the D'Arsonval current completely eradicated the growth. No recurrence was noted for two years.

If such growths do not respond promptly, fulguration should not be continued, as they are malignant and will be stimulated. Geraghty and others have found that some of these early malignant cases which are not readily amenable to fulguration will rapidly respond to it after the application of radium.

For fulguration some use the uni-polar current, but the majority prefer the bi-polar D'Arsonval current because it penetrates more deeply. Buerger snares the growth and fulgurates the base. Unquestionably, radium should be implanted in the base if malignancy is suspected. Recurrence was noted in 25 per cent of the cases at Beer's Clinic; 27 per cent at the Mayo Clinic; 29 per cent at Johns Hopkins. It comes, as a rule, within a few months and at the original site. Examinations at intervals of a few months should be insisted upon.

So far the treatment of bladder tumors is agreed upon. Beer states the following contra-indications to fulguration in papilloma:

1. Tumor not readily accessible as about the sphincter.
2. Uncontrollable bleeding.
3. Multiple extensive papillomas.
4. Intolerance of cystoscopy.

For such cases the open operation is necessary.

The further therapeutic armamentarium consists of:

1. Partial cautery resection with infinite care to avoid implantation of tumor cells; total resection in selected cases.
2. Radium implantation through the cystoscope or cystotomy.
3. Diathermy through the cystoscope or cystotomy.
4. Deep x-ray.
5. A combination of these.

Resection of the Bladder—Gardner, in 1915, collected eighty-six cases in which only the growth was excised with 76.3 per cent recurrence in three years, while in fifty-eight cases in which the bladder wall with the growth was taken, 43.9 per cent recurred after three years. Scholl reports in 216 operated cases at the Mayo Clinic 48.2 per cent alive on an average of 3.2 years. Lower, in sixty-one resections, found 67.2 per cent dead, half in the first year. Squier, in 1923, reported results with his segmental resection of the bladder; that is, taking that entire segment of the bladder which drains into the same regional lymphatics with the tumor. It is impossible to remove the regional lymphatics of the bladder. Twenty-eight of the sixty cases were alive from two to eight years; not appreciably better results than with the old method.

Squier, Beer, Thompson Walker, and others have developed a method of surgical attack, with especial reference to avoiding implants. The essentials of this method are:

1. With the patient in the Trendellenburg position, through a long extra-peritoneal incision, free the bladder to the trigone, deliver it, and pack about it.
2. To avoid flooding the wound with cancer cells, have the bladder empty.
3. Open at a distance from the tumor, holding the bladder with smooth forceps.
4. Cauterize deeply the tumors and do a wide cautery excision, including the ureter if necessary.
5. Unless the peritoneum has been opened, fill the entire wound with 70 per cent alcohol for five minutes. Two per cent silver nitrate can be used.
6. Transplant the ureter if necessary.
7. Sere the raw surfaces and close with drain.

No statistics are available, but method, we are assured, is producing better results.

Total Cystectomy—In cases of advanced or multiple carcinomas confined to the bladder, especially those invading the sphincter, total cystectomy is the operative procedure of choice. It should be done in two stages. Scheele has collected sixty-two cases of total cystectomy with thirty-two permanent cures. Transplanting the ureter into the bowel requires great technical skill, and infection of the kidney mars many good results. The safer, though disagreeable procedure, is nephrostomy or ureterostomy, with ureteral catheters draining into bag.

In all surgical operations on the bladder, preoperative conditioning of the patient, tests of renal function and heart function, and clearing up infection as far as possible, are of the greatest importance, a lesson learned from prostatectomy.

COMBINATION OF SURGERY, DIATHERMY, RADIUM AND X-RAY

Success with the open method, using the D'Arsonval current, 1500 milli-amperes and a spark gap of .5 cm., and a large burning electrode so as not to produce sparks has been reported by MacGowan, Kolischer, and Corbus. If one meatus is involved, ureteral transplantation will be required, or if the kidney be infected, nephrectomy. Thomas and Pfah-

ler have added the implantation of radium needles into the cauterized base, with subsequent x-ray of the regional lymph nodes, reporting in 1922 twenty-six patients so treated in the previous three years with, up to that time, two deaths and one untraced.

The following case illustrates this procedure:

L. H. Male, referred by Doctor Lockwood. He has had spells of blood in the urine for six years. Two years ago he had complete retention from clots, and now has a hemoglobin of 30 per cent. Blood transfusions were necessary before attempting even a cystoscopic examination. This revealed a necrotic, malignant papilloma seven centimeters in diameter at the base, back of the right meatus, with implants on the opposite wall. The bladder was opened, the growths completely burned away with a bi-polar current, fifty milligrams of radium in needles implanted in the primary base for twelve hours, which was supplemented by an equal amount of fully screened radium on the surface later. This was over three years ago. He has been working daily at his trade, and recent cystoscopic examination showed no sign of recurrence.

Radium Alone — Barringer, by endo-vesicle or suprapubic implantation of radium alone, reported, in 1922, eight of ten cases of small carcinoma free from growth from three months to four years, and twenty inoperable cases with the tumor removed from the bladder for a period of one month to four years, during which three recurrences and one death were noted.

Buerger, in 1923, reports favorable results with radium alone through the cystoscope. It is generally agreed that the best results are achieved by the burying of the radium in the growth. Holding the radium against the growth is generally ineffective and more damaging to the normal mucosa.

Barringer's method is to open the bladder, remove the growth by cautery, and bury one millecurie of radium emanation in a capillary glass tube for each cubic centimeter of tumor. The lethal effect barely extends one centimeter, and the danger of missing some cells is great. Braasch and Scholl found, in histologic study of tumors so radiated and removed, that there were nests of living cells incarcerated by areas of fibrosis. This possibility makes it necessary to supplement the buried, unscreened radiation by topical, screened radiation.

If the urine is diverted from the bladder, comparatively huge doses of radium can be given, bringing hope to hopeless cases.

In using radium, these elementary principles of radium therapy must be borne in mind:

1. That cancer cells are more susceptible to the first radiation than to any succeeding radiation. Those men who treat, for example, carcinoma of the cervix uteri will tell you that the full lethal dose should be applied within six weeks and that subsequent fractional doses do more harm to the host than to the tumor.

2. As a corollary to the first, if tumors do not respond promptly to an adequate dose, they are radium resistant and will never respond.

3. Recurrences after radium do not respond well.

4. There is an enormous difference in the radium susceptibility of any given tumor. Radium has a selective effect on germinating cells. A soft cellular tumor will respond more quickly. But, unfortunately, such a quick growth is evidence of poor resistance of the host, and unsuspected extension or metastases are likely to have occurred beyond the visible area. Experience shows that papillary carcinomas are more favorable than schirrous, squamous or adeno-carcinoma of the bladder.

5. Radium rays, exactly like light, decrease as the square of the distance increases. Therefore, a lethal dose at one centimeter is one-fourth of a lethal dose at two centimeters. This is so simple that a child can understand and yet it is constantly disregarded.

6. Determination of the effective dose must take account of the absorption of radium rays. Therapy with unscreened emanation implants, depends largely on the soft beta particles. Now, one millimeter of soft tissue absorbs half of these, ten millimeters nearly all. It is plain, therefore, that before the comparatively few hard gamma rays can greatly affect tissue at two centimeters, the center will be necrosed. The body can only tolerate a limited amount of the toxemia this necrosis entails. Hence the area radiated at one opening of the bladder is limited. *Radium, from which the soft rays have been screened, is effective at a greater distance. That this is true is proven by hundreds of cases in which permanent suspension of the function of the ovaries has been caused by 1500 milligram hours of screened radium in side of the uterus. Practical experience has shown that needles buried accurately 100 milligram hours per cubic centimeter of cancer, supplemented by screened radium, often succeed in complete destruction of the growth. To make sure of outlying areas and metastases a more general radiation is needed.

Deep X-ray Therapy—This is a drag net for the whole pelvis. Considering the fact that it is the only method of affecting the lymph nodes, draining the bladder, it should be used in every case of malignancy. Experience does not show that it can take the place of local treatment, but the results of local treatment have been shown to be better when supplemented by x-ray.

Palliation—In many advanced cancers, especially with metastasis, the greatest comfort and longest life will be obtained by diverting the urine with no local treatment of the bladder. X-ray, or radium, may stop bleeding in inoperable tumors.

This series comprises eighteen cases:

Benign papilloma	2
Malignant papilloma	1
Papillary carcinoma	5
Schirrous carcinoma	6
Adeno-carcinoma	2
Secondary adeno-carcinoma	1
Squamous cell carcinoma	1

It contains some interesting cases.

Mr. C. Aged 91. Referred by Doctor C. D. Lockwood. He had Bottini cautery operation nineteen years ago by Doctor MacGowan for prostatic obstruction. This relieved him for five years when the trouble recurred. Doctor MacGowan then did a perineal prostatectomy. This gave him about ten years of comfort when pain and obstruction at the bladder neck recurred. He was told at this time that the trouble was due to polypi, and these were removed by fulguration. This gave him some relief, but there has not been the previous comfort since. Recent cystoscopic examination showed further polypi, but also a nodular, slightly ulcerated mass 1x2x2 cm. above the sphincter. Except for a mild cystitis the bladder is normal. No signs of the prostate present.

On account of the intolerable frequency and pain at the bladder neck of a suprapubic cystotomy was done. The growth was found as described, very dense and ulcerated. Section by Dr. A. M. Moody showed it to be adeno-carcinoma. Radium needles were implanted, 1200 mgh.

Subsequent examination showed the growth to have disappeared. It is now three years, and at ninety-four he is active and without signs of recurrence.

Mrs. A. M. Aged 65. Had had bleeding from uterus two years prior to a heavy treatment of 8000 milli-

*For caustic action, radium has no advantage over diathermy. It is for that twilight zone of selective activity on cancer cells beyond the living point of normal cells that its action is invaluable.

gram hours of fully screened radium for an adeno-carcinoma of the body of the uterus. The growth disappeared, the uterus became normal in size, and the patient was apparently in good condition.

Two years subsequent to this blood appeared in the urine and cystoscopic examination showed a cauliflower ulcerating carcinoma, extending through the floor of the bladder three centimeters across its base. In spite of the hopelessness of the condition the patient wanted radium, and 500 milligram hours of gamma rays were given against the growth. Thorough deep roentgen therapy was applied by Dr. Carl Parker. Now, one year after, the patient appears in perfect health, the urine is negative and cystoscopic examination shows only a silvery soft scar in the floor of the bladder.

W. H. H. Aged 69. Referred by Doctor Macklin.

Terminal hematuria first noted four weeks ago. No frequency and no discomfort whatever. Urine shows a little blood, no pus.

Cystoscopic examination showed in the center of the dome a tumor 2 cm. in diameter, slightly raised, without papillary projection, but with rugae. No ulceration and the border and remainder of the bladder are normal. It did not melt with fulguration, and tissue removed with the rongeur showed the histology of a rectal growth —typical columnar epithelium with goblet cells. It was believed, therefore, to be of allantoic origin.

Operation showed a growth about the size of a hen's egg outside the bladder, extending toward the umbilicus. In it was a cyst 3 cm. in diameter, filled with colloid material. The growth was adherent to the peritoneum, but did not involve it. Intra-peritoneal exploration showed no secondary growths. Sagittal section shows an infiltrating growth originating in the midline just above the bladder and extending through it at the urachal attachment. Microscopic section shows an adeno-carcinoma with intestinal type of cells.

The post-operative course was uneventful. Deep x-ray therapy will be given.

Citizens Bank Building.

DISCUSSION

WIRT B. DAKIN, M. D. (756 Broadway, Los Angeles)—The word problem in the author's title of his paper is certainly very appropriate in dealing with nearly all bladder tumors, whether benign or malignant, with the one exception perhaps of small "young" uncomplicated papilloma. Any personal equations or observations on his part are surely well appreciated by those in close touch with this subject.

Too much importance can not be placed on the portion of his paper in which he endeavors to impress upon the family doctor and the public the seriousness of the first blood noticed in the urine. Another item of interest is the importance of having these apparently well treated and cured patients return at stated intervals for observation.

His review of various authors' methods of surgical attack, with especial reference to avoiding implants, is interesting. Any prophylactic measures in this respect should not be omitted. Personally, it might appear a trifle strenuous to some in advising the filling of the bladder with 70 per cent alcohol for five minutes as well as the suprapubic wound just before opening the bladder. However, if a large suprapubic drainage tube is used following the operation it would appear that sloughs of nearly any size would easily get out of the bladder.

The author should be complimented upon his careful and studious consideration of this most interesting subject. Recent consideration of this subject from a standpoint of tumor classification in regard to their degree of malignancy should help in deciding what method of procedure to follow in treating these tumors.

GRANVILLE MACGOWAN, M. D. (Brack Shops Building, Los Angeles)—The treatment of tumors of the bladder is a fascinating one. Doctor Ferrier has handled the subject in a very masterly manner.

In dealing with tumors of the bladder, two things have to be remembered. One is that whatever the apparent nature of any tumor that springs from the mucosa may be, if it is not removed and removed completely, early, it will eventually become carcinomatous. The other is, that any method of treatment applied to it must be thoroughly destructive to all of its pathological cells, or it will prove futile.

I am satisfied if the tumor is discovered within a reasonable time after its appearance, that we possess, in its dessication by the skillful use of the D'Arsonval current; by the burial of radium needles within the tissues of the bladder at the site and in the immediate neighborhood of the growth—by the modality of the high voltage x-ray—agents which will, used singly, or with judgment in combination, effect a cure.

I do not look with favor upon any bloody dissection of the tumors. I have removed tumors, even when cancerous, by the knife and, in a few instances, have effected a cure; but resection, combined, as it inevitably is, always with rough handling, is not a reasonable method of treating these tumors, and does not give to the patient a proper chance.

I am inclined to believe that we have, in the recently introduced modality of the radio knife, an agent which will prove very valuable for the gross removal of bladder tumors in a bloodless manner. The dissection made, the base should then receive the application of the fulgurating current, or the placing of radium in needles at the selected spots within the zone of the tumors in the bladder wall, from which they have been removed.

I am not in favor of the proposal to remove the bladder in totality, the benefits of which seem to be an obsession of Doctor Ferrier. It is practically impossible to make a complete dissection of all of the tissues which are involved in the cancerous growth that has invaded the sphincter. Total cystectomy is not an easy operation even upon a man who is dead, and one might be allowed to be very skeptical about the thirty-two permanent cures which are said to have been collected by Scheele. If a carcinoma of the bladder is manifestly inoperable or success has not followed a radical application of the measures herein advocated, a double lateral nephrostomy will be, by all means, the measure which will give to the individual the greatest comfort and the longest life.

R. L. RIGDON, M. D. (291 Geary street, San Francisco)—The attitude of the general surgeon toward neoplasms in any part of the body may be characterized as radical. He realizes from a vast experience, that thorough and complete removal is the only justifiable method to pursue and if any course short of this is recommended, it is because of some deterrent circumstance in the individual case.

I believe this same attitude should be taken by urologists, with reference to bladder tumors; in other words, complete removal or destruction should be the aim.

There are so many conflicting circumstances to be considered in tumors of the bladder that very often the best method of procedure is difficult to determine, and it is just here that Doctor Ferrier's paper holds much of interest for us. He has very clearly and definitely suggested the best modes of procedure in different types of cases and his paper should be a reference guide to us in our work.

Another point that must impress all of us, is the necessity of early diagnosis. All practitioners of medicine, specialists or general, should have impressed upon them the necessity of giving due heed to the early symptoms, such as hematuria. Most patients are much alarmed at the appearance of blood in the urine, but unless this be accompanied by pain, they are apt to attach too little importance to it and presently their natural optimism and distaste for examination lead them to put aside investigation to a later date. In this manner, one golden moment may pass and the trouble which might be controlled easily if taken early merges into that large group of late diagnoses, where remedial measures are difficult or impossible.

FRANK HINMAN, M. D. (380 Post Street, San Francisco)—The paper by Doctor Ferrier brings out clearly and in detail the main and important facts of diagnosis and treatment of tumors of the bladder and I see no criticism of any statements he has made.

It was my privilege to work for three years side by side with J. T. Geraghty who has been the most quoted authority on bladder tumors for the past ten years and who always gave to those about him freely and com-

pletely of his knowledge and experience, and I carry with me today some very important impressions as a result of this association.

In the first place, the presumptive evidences of tumor of the bladder are rarely definite. Bleeding is a sign so frequently in other conditions than tumor and frequency of urination or other disturbances of urination accompanies other conditions even more frequently so that symptomatically can tumor of the bladder rarely be diagnosed. The one and only positive finding, other, of course, than that from cystotomy, is the cystoscopic one, and, clinically, Geraghty was always accustomed to differentiate two distinct types of bladder tumor; the one was papillary and most frequently multiple, the other was a sessile and infiltrating flat type tumor and occurred usually singly. The papillary tumors were distinctly of three types: First, the benign papilloma, second, the malignant papilloma and, third, the papillary carcinoma, the distinction being very simply that there was no cancer in the first, that in the second the malignant degeneration was confined to the body of the polyp and in the third that the malignancy was infiltrating the base and bladder wall, but clinically the three types were conveniently associated because the initial treatment of all three was the same, namely fulguration. The second single infiltrating sessile type tumor comprised the vesical carcinomatas in which fulguration is usually useless. The cystoscopic differentiation of these two types is usually simple and it must always be borne in mind that a papillary tumor is potentially malignant even though it is not a papillary carcinoma. Attempts to remove fragments with a cystoscopic rongeur are, as a rule, not of much assistance in the diagnosis between a benign and malignant tumor except when such fragments are definitely malignant; negative findings are valueless for the fact that the fragment may have well come from a benign area.

In a plan of treatment of bladder tumors the above clinical differentiation of Geraghty's is a great help. The initial treatment of all papillary tumors, irrespective of its being any one of the three types mentioned, is fulguration and, according to the immediate responses, the use also of radium and x-ray. One very important factor in the treatment of this type of tumor is follow-up treatment and periodic observation and inspection for long periods after the initial treatment. The next line of treatment in these cases is that of resection surgically after the cautery method of Edwin Beer of New York in all papillary type tumors which do not readily disappear under fulguration, radium and x-ray. In the sessile or infiltrating type tumor the first consideration is whether the tumor is operable or inoperable and this surgical consideration is concerned not only with the amount of mutilation so far as the bladder itself is concerned, on account of its site, but is also concerned with the clinical condition of the patient as to age and surgical risk. If operable under these considerations, radical resection, after the cautery method of Edwin Beer, should be given preference, it always being understood that at the time of operation radium implantation is used and that proper x-ray treatment is given afterwards.

Under this head of operable tumors, I believe, there is a distinct field of usefulness for even the radical one of extraperitoneal cystectomy with suprapubic ureteral drainage as advocated by Judd or, according to the operative conditions at the time, uretero-rectal implantation. In the second inoperable group of infiltrating tumors fulguration, radium and x-ray should be given second choice and cystotomy and nephrostomy third choice as purely palliative measures.

Under the above plan of diagnosis and treatment of bladder tumor, it is seen that the most important factor that will give the optimum result is early diagnosis, and cystoscopy can now be recognized as the one method of making an early diagnosis, so that every case in any way suspicious should be immediately cystoscoped.

Men who cannot be beaten, though they fail a score of times, men who cannot be discouraged by an army of difficulties, sometimes go tumbling down as a result of a little success. More men are failures on account of success than on account of failure.—Dearborn Independent.

CHRONIC BACK PAIN FROM A MECHANICAL POINT OF VIEW

By JOHN DUNLOP, M. D., *Los Angeles*

Faulty mechanics of the lumbosacral joints are more responsible for backache than are the sacro-iliac joints.

There are very few sacro-iliac injuries which are not accompanied by lumbosacral injury.

A very careful history will usually show that most backaches are initiated by an acute onset.

DISCUSSION *by Alfred Roncovieri, San Francisco; Maynard C. Harding, San Diego; William Lisle Bell, Oakland; Harold H. Hitchcock, Oakland.*

IT IS always a matter of surprise to me that the importance of faulty mechanism of the spine as a cause of chronic back pain is not more frequently recognized. I say this reservedly, for I appreciate that the specialist is often criticized for diagnosing a condition as falling into the category of his own special line. However, when a certain type of case comes very frequently under the observation of the specialist it is natural that he should be impressed by the importance of a correct understanding of it.

Chronic back pain, from a mechanical point of view, has held the attention of the orthopedic surgeon since Doctor Goldthwait's first paper in 1905, concerning the relation of the relaxation of the sacro-iliac joints to instability of the back. I have been fortunate enough to be in a position to observe the entire development of the subject of back pain from the orthopedic standpoint, and since the early days my ideas have undergone considerable change. I was one of those who (twenty years ago) attributed almost all the backaches to the relaxation of the sacro-iliac joints. For the last twelve years, however, I have felt that faulty mechanics of the lumbosacral joints were more responsible for the trouble than were the sacro-iliac joints, and the more I have been able to study my cases, especially with very carefully made stereoscopic x-ray examination, the more positive I feel that the lumbosacral joints are at fault in the great percentage of cases. In fact, I feel that there are very few sacro-iliac injuries which are not accompanied by lumbosacral injury.

When we take into consideration the spine and pelvis and their mechanical construction, we wonder that these very delicately constructed joints are not more frequently the subject of injury.

We might stop here to explain what we mean by injury. Most of the injuries are of a subtle nature; I should say strains from a disturbance of relations at the joint surface. I mean a relaxation or stretching of the ligaments holding such joints in their normal relationships: by sprains, I mean a definite tearing of tissues, which would allow abnormal freedom of movement. There is no question in my mind but that many of these acute cases, or those with acute onset, are due to sprains. Further, when the relaxation is sufficient, there can be no question about the increased amount of mobility possible in the joints, even to the point of dislocation, and we must feel that a number of these badly contused cases are fractures, fresh or healed.

In addition to injuries, we must take into consideration the diseases which are of a chronic nature and can inflict injury on joints and cause somewhat similar symptoms. Hypertrophic or infectious ar-

thritis are probably the more responsible causes, but we must remember that we are dealing with true joints in every respect and that they are subject to every disease that any other joint is subject to, and therefore the whole category of possibilities must be considered.

A very careful history will usually show that most backaches were initiated by an acute onset. The patient can almost always say just when the trouble started. In Dr. Goldthwait's early cases, which were those following delivery, the trauma was unquestionably due to the act of child-bearing, and from that time on the patient was conscious of a difference. It is my opinion that in all of those cases connected with obstetrical conditions there are sacro-iliac relaxations or injuries and, no doubt, most of those first cases reported by Dr. Goldthwait were of that nature. There is, undoubtedly, a large class of cases where the relaxation of the supporting ligaments to the sacro-iliac joints is so extreme that true motion exists in one or both sacro-iliac joints. This is especially so in the cases where there is so much difficulty following childbirth.

There is another class of cases belonging in this category to which I wish to draw attention, because they have been little understood. I refer to the cases of women who have backache accompanying the normal or abnormal relaxation during menstruation. This relaxation is, in my opinion, definitely due to the softening of the ligaments supporting the sacro-iliac or pelvic joints prior to, or accompanying menstruation, due to a more copious supply of blood to all of the pelvic structures at such a time; another reason why those so afflicted should remain quiet, in order to avoid strain during this period.

As one's experience grows, it appears more evident that post-parturient or delivery injury forms but a small percentage of the cases under discussion. Persons who are subjected to any activity which places a more than ordinary load on the spinal articulation are liable to this injury. I personally believe that among people who have lived to middle age there are few who have not suffered sufficient injury of some spinal or pelvic joint to have had symptoms therefrom.

The more common symptoms of such a condition are sciatica and lumbago. Victims of these so-called maladies often suffer acutely and continuously, and it is astonishingly difficult to convince most of them that their sufferings can be quickly and completely relieved by a skilful treatment of the mechanism of the joints. We should emphasize our assurance to such patients that prompt and complete relief can be obtained, usually by simple means, and that invalidism is unnecessary. This advice should be disseminated, not only among those who have followed mistaken methods of treatment, but also among that class of industrial cases who, rather than work in good healthy surroundings for a living, seek the existence allowed for disability by our State Compensation laws.

It is quite easy to appreciate the signs and symptoms of low back injury of the lumbosacral area when we consider the lumbosacral joints. They are shallow, about half an inch in diameter, irregular in shape and faceted. It is by means of these little facets that practically all the motion between the trunk and the lower part of the body takes place. In the ordinary way in which we use our bodies it is easy to understand how strains can take place in this location, because there is so little protection against them.

Papers written in recent years by anatomists establish the variations in anatomy of the low part of the spine and the pelvic articulations. Under such conditions it is difficult what is normal or what constitutes normal function. Many of us feel that the greater the departure from what we have considered normal, the more pronounced and uncertain are the consequences of injury. We do know that most of the understood signs point more often to the lumbosacral or sacro-iliac than to the intervertebral articulation higher up. This conclusion also is supported by our anatomical observations. The joints higher up than the fourth lumbar run pretty close to standard construction and lend themselves very little to joint injury.

It may be well to enumerate some of the possible traumatic injuries: bad posture; that is, any position which will put the lumbosacral or sacro-iliac joints on a strain. Flat back; pendulous abdomen with lordosis; short leg; scoliasis, paralysis, are examples. The former faulty dress of women was often responsible for faulty attitudes; such as improperly constructed corsets and improperly balanced shoes. The harm produced by faulty dress has, with present styles, been almost eliminated, and there has been considerable improvement in shoes, although they still form a definite etiological factor.

Knowledge of the usual antero-posterior spinal curves is necessary in order to be able to judge of lordosis or flat-back, which is so predominant and prevalent in backaches due to postural defects. Occupational injury may be very slight and yet be a factor in producing backaches. The use of the joint in a slightly unprotected position over a long period of time, causing a constant stretching or irritation of the joint may be all that is required. Riding in an automobile in a faulty position is a common example. Sitting in a chair of uncomfortable height; standing slightly stooping in any type of work, or flattening of the back on the operating-table when the patient is completely anesthetized, may produce trauma. These are types of injuries which are unnoticed by the patient at the time of injury.

SLIGHT TRAUMA DUE TO SUDDEN OVER-STRETCHING OF THE JOINTS

This, I believe, is the largest group of causative agents of backache. One suddenly moves in a certain way, or meets an unexpected resistance to motion, there is a stitch in the back and one has difficulty in straightening up, the pain being always located at the lumbosacral area. Examples of this may be very slight or very severe. In former papers I have noted some of the most severe types.

The point I want to emphasize is that we are dealing with abnormal joints, the result, in a great majority of cases, of injury, and that these injured joints are not functioning normally, and that through this abnormality of function certain symptoms develop.

I will enumerate: Backache, with pain, located usually at the lumbosacral level, at times distinctly

down the line of the sacro-iliac joint. On abdominal examination, we frequently find tenderness on pressure over the sacro-iliac joints.

There may be referred pains from disturbance of posture or from nerve irritation. Those from disturbance of posture are usually referred up the spine, especially to the back of the neck, but may be quite bad in the mid-dorsal area. Those troubles from referred pains are usually sciatica, pain in the hip-joint, in the sacro-sciatic notch, coccyx, in the low abdomen and groin, and down the outer side of the leg; pain associated with constipation and filling of the large bowel, causing pressure on the sacro-iliac joints in front; and pain directly associated with menstruation at the time when the pelvic ligaments are naturally softened.

The *physical signs* of mechanical disturbance are: Obliteration of the lumbosacral curve; obliteration of lumbosacral fossae; prominence of sacrum; asymmetry of the lumbar and sacral region; prominence and spasm of the lumbar muscles, usually unilateral; restriction of motion in the low spine; restriction of straight-leg lifting; restriction of hyperextension of the hip-joint; usually *little* restriction of the flexed hip in either direction, or complete flexion of hip; tenderness on pressure over the irritated joints, both from behind and through the abdomen, and also from a rectal or pelvic examination; restriction of all movements producing movement of the low spine, such as arising from bed with legs straight, causing pull of the hamstring muscles; rising from the sitting position, stooping; lying in bed, with too much sag, thereby obliterating the normal lumbar curve, as in long protracted illness and fractures.

In accepting faulty posture as one of the frequent causes of backstrain, we must not lose sight of the fact that disturbed foot balance, by throwing the body out of correct alignment, may be a large factor in the production of backache. The normal relations of weight-bearing surfaces of the joints are disturbed, and mechanical irritation is thereby produced.

Much has been ascribed to the sacro-iliac joints which, I think, could well have been ascribed to the lumbosacral joints. There is a condition due to acute trauma which, to my knowledge, has never been so described. I have demonstrated this both from an x-ray standpoint and by clinical observation. It is a rotation of one innominate bone. For such an injury to take place there must be an accompanying injury of the symphosis and one sacro-iliac joint. In those cases where I believe this to have taken place the amount of rotation is, I believe, very slight, but definite enough to make a distinct difference at the pubis and the ilium and the ilium and sacrum on one side. With very carefully taken stereoscopic rays in more than one plane where the findings are identical, I believe such a lesion can be demonstrated. And manipulation done under anesthesia, with the idea of rotating the innominate bone, produces immediate results, which convince me of the correctness of the observation. With such a manipulation there is the feeling and audible demonstration of a click, and on the awakening of the patient the pain is gone. I have plates which, when carefully examined in a stereoscope, will prove my contention. Unfortunately, these stereoscopic plates cannot be demonstrated on a screen. This lesion is necessarily a true sacro-iliac injury.

Treatment must be attacked as the treatment of injury in any other joint would be attacked; that is, rest through the acutely irritated stage; restoration of relationship by manipulation or, if necessary, operation of the affected joint; gradual return of function without producing pain, the latter usually with the use of some form of fixation in order to prevent further irritation; local improvement of muscle and ligamentous tone and improvement of local circulation; correction of posture by use of apparatus or physical development.

CONCLUSIONS

I. That chronic back pain is very often the result of disturbed mechanics of the bones and joints of the spine and pelvis.

II. That normally constructed joints of the spine and pelvis, when subjected to extraordinary stress, are liable to injury just as are other joints of the body.

III. That in subjects where the normal tone of the ligamentous structure has been lost unusual movement in the joints is possible and the ordinary stability is lacking, with accompanying strain (of the entire mechanics dependent upon it); or there may even be such relaxation that dislocation may be possible.

IV. That the disturbance of the normal mechanics is frequently due to abnormalities or asymmetrical developments of the spinal and pelvic zones, and more especially due to the formation of the joint surfaces between the spine and pelvis known as the lumbosacral articulations, which lend themselves more readily to injury when subjected to any unusual uses to which they may be put. That unless the mechanical defect is corrected pain remains, due to a true mechanical irritation within the joint. In the cases caused by relaxation the tone of the supporting tissue must be supported and built up to enable them to do their usual work. In the cases where there has been a true change in the relation of the joints, the normal relation must be restored before the supporting and building up process is instituted. In the cases where anatomical construction is at fault, in addition to support during the irritated stage, the patient must be instructed in the use of the body in such a way as to prevent strain and irritation.

V. That most carefully trained physical directors who fully appreciate the work in hand should be employed, and should work wholly under the supervision of the physician.

523 West Sixth Street.

DISCUSSION

ALFRED RONCOVIERI, M. D. (Flood Building, San Francisco)—Doctor Dunlop has presented an interesting paper on an important subject. After ten years of active industrial surgery, I know of no other type of disability which presents such a problematic outcome from the standpoint of response to treatment and recovery. It seems to me, as Dunlop has suggested, that there has been a general lack of understanding as to the mechanics of back strains, as well as the pathology and treatment.

I am particularly struck with Dunlop's summary of back injuries, with particular reference to the finer shades

of interpretation between strains and sprains, which, I think, admirably covers the situation.

I concur with his opinion regarding the likelihood of most low back injuries being lumbosacral rather than sacro-iliac in origin and pathology. Aside from the fact that clinically we can demonstrate this to be true in the majority of cases, it also seems reasonable from a consideration of the anatomy and structure of the region. The lumbosacral articulation is a true joint, movable and exposed to injury much more pronounced than the sacro-iliacs which, anatomically, are not true joints, but synchondroses. I have always felt that it is mechanically almost impossible to get ordinary strains of the sacro-iliacs without some degree of sub-luxation. Luxations of the joint, even in slight degree, can now be positively demonstrated by radiograms which should show a distinct altered relationship of the symphysis.

I am sorry Doctor Dunlop did not go into the matter more fully of operative treatment for true sacro-iliac pathology, both traumatic and non-traumatic. From my observation of patients coming under my care during the past two or three years, and with a review of the literature, I am becoming convinced that a well-performed sacro-iliac arthrodesis by the Smith-Peterson procedure gives the best and most practical means of eventual recovery in these troublesome cases, particularly referring to the definite luxated or diseased types. Though frequently tried, and at times with relief and improvement, manipulation and immobilization rarely seem to have produced the desired results in my hands.

Unquestionably postural deformities predispose to low back strains, and prolong recovery, as Dunlop has pointed out.

The question of a complicating osteo-arthritis is also another disturbing factor, which, in my experience, has always aggravated more severe back strains, and has prolonged the milder types.

MAYNARD C. HARDING, M. D. (Electric Building, San Diego)—Doctor Dunlop's excellent paper opens so many lines for discussion that one must leave out much that he would like to say. Two points are uppermost in my mind.

The first is in regard to x-ray. After ten years of checking up hundreds of cases of back pain with the x-rays of normal cases, I am forced to the opinion that it is rare, indeed, to get positive x-ray findings in sacro-iliac pain. The low lumbar pains give a slightly higher percentage of positives.

The second point is in regard to the technique of examination. I wish that Dunlop had given us, from the fullness of his experience, his exact methods of examination. I believe that most of the poor diagnoses of back pain are due to slovenly methods, and I, for one, am unable to arrive at a diagnosis with any certainty until I have gone through my entire procedure.

A few months ago I visited a large number of orthopedic hospitals in the East, and in not one did I see a back examined with sufficient thoroughness to warrant the diagnosis arrived at. I feel it is for orthopedic surgeons to lead the way in instructing the profession at large in the methods of diagnosis and treatment of these distressing patients who come to us all.

WILLIAM LISLE BELL, M. D. (1327 Broadway, Oakland)—It has been a pleasure to go over the paper of Doctor Dunlop. He certainly knows his subject and I, too, am only sorry that he could not have had more space to devote to treatment. A paper of this sort necessarily covers so much territory that one must conserve somewhere.

As early as 1908 I had convinced myself that lumbosacrals comprised the volume of lower back injuries and have even gone so far as to say publicly once or twice that I thought sacro-iliacs constituted not over 5 per cent. So I cannot very well disagree with Dunlop on this score. I am convinced also that, were we able to have patients with back injuries within twenty-four or at the most not over forty-eight hours from time of trauma, with proper distraction, relaxation, and fixation, very few of them would go on to a prolonged chronic condition. Many of them are untreated for years and worse than that, many of them go to the ignorant manipulators who pretend to adjust.

One point mentioned to me by a famous old Vienna physician twenty years ago is intra-abdominal gas pressure, mechanical pressure, with its consequent intestinal toxaemia. As to softening of the sacro-iliac ligaments during menstruation and consequent relaxation, well, I shall have to be a trifle disagreeable and say to Doctor Dunlop that my own view of this angle inclines more to a general edema in this region at this time, with its extension, no doubt, to the somewhat predisposed nerve structures. And then, to my mind, one of the most prolific causes of low grade back discomfort, that type which is more or less continuously present and often quite discomforting during sudden extensive excursions of the spine, is not a muscle spasm, is not an inflamed nerve, is not a disarranged column, but the chronic fibrosis, or better still the chronic inelasticity of certain groups of muscles that have degenerated in their continuous effort at splinting.

These muscles are not often palpable, and do not seem rigid except when distracted by the opposing group, but they do have very limited extensibility and do effect a decided pinching when their elastic limit has been reached through contraction of the counter group. It is in these cases that deep thorough intelligent massage helps, but massage alone cannot relieve this condition without active and oft-repeated stretching on the part of the patient himself.

HAROLD H. HITCHCOCK, M. D. (1904 Franklin Street, Oakland)—The mechanics of the back are certainly a great factor not only in causing back pain, but in keeping on going after it has once started.

In the figures obtained by Roger Lee and Lloyd Brown at Harvard, and the University of California Infirmary, examining freshmen students, it was found that 75 per cent of all male freshmen have very poor body mechanics. If this is true of these young men, the pick of the country, it must also be true of those outside of our colleges.

I believe that long-continued tilting the pelvis forward, slumping the upper trunk backward and hanging the head forward, an attitude of fatigue, gives rise to contractures in the psoas and rectus femoris muscles, as well as other smaller muscles that makes it almost impossible for many people to tilt their pelvis backward and decrease their lumbar curve, just as foot drop gives contracture of the calf group.

The muscle balance in the low back is thereby upset just as a short heel cord will upset the muscle balance in a foot, and much extra work is put on the small lumbosacral joints which should be taken care of by normally balanced muscles. Many of these injuries will not clear up until this balance is restored. I regret that Dunlop could not give more space to his corrective procedures.

Young men who are using their bodies mechanically incorrectly constitute one of the biggest problems at the University of California Infirmary. Their x-ray findings are usually negative, they do not improve until their whole mode of living is corrected, which includes their bed, automobile, their chairs and their way of standing, walking and using their bodies.

I have not been able to visualize ligaments relaxing and stretching as a result of increased congestion of the pelvis vessels.

Curve of Inorganic Blood Phosphates During the Sugar Tolerance Test; Significance in Diagnosis and Prognosis—F. W. Hartman and Adolph Bolliger, Detroit (Journal A. M. A.), assert that the effects of insulin on phosphate utilization are comparable to those on carbohydrate utilization. Abnormal carbohydrate metabolism may be divided into seven groups by means of the blood phosphate curve. Slight abnormalities and the functionless pancreas are readily identified through the phosphate curve. Abnormal carbohydrate metabolism associated with the pituitary, and possibly with the suprarenals, may be recognized.

What do you think about the suggestion that has been made, to make drug addiction a reportable disease?

THE PATHOLOGY OF COLITIS

By CURTIS E. SMITH, M. D., *San Francisco*

Apart from the inflammatory or destructive lesions produced in the colon by tuberculosis, syphilis, amebic or bacillary dysentery, carcinoma and diverticulitis, there is a heterogeneous clinical group, designated as mucous, idiopathic, infectious, hemorrhagic and ulcerative colitis.

Colitis may be secondary to certain diseases which lower the resistance of the patient with probably some toxic effect on the mucous membrane which allows bacterial invasion.

The disease variously described as idiopathic, infectious or ulcerative colitis is an inflammation of the mucous membrane of the colon, probably due to bacterial invasion.

DISCUSSION by *George Dock, Pasadena; J. Marion Read, San Francisco; Rawson J. Pickard, San Diego.*

UNFORTUNATELY the pathologist cannot see pathological, chemical, and biological processes in their various phases as they are taking place in the human body. One is often forced to study merely the end-result of such a process at necropsy, which is of scant benefit to the patient. This seems especially true of the inflammatory processes of the large intestine, which may terminate in the condition known as chronic ulcerative colitis.

Apart from the inflammatory or destructive lesions produced in the colon by tuberculosis, syphilis, amebic or bacillary dysentery, carcinoma and diverticulitis, there is a heterogeneous clinical group designated as mucous, idiopathic, infectious, hemorrhagic, and ulcerative colitis. This group is idiopathic, in the sense that no definite organisms or other etiological agents have been found to account for the inflammatory process. Any attempt to separate the various types of colitis in this group into definite clinical entities would seem as illogical as the terms "mucous," hemorrhagic," or "ulcerative rhinitis." The difference, pathologically, in these various forms of colitis is in the degree of the inflammatory process.

Anatomically and physiologically, the colon is rendered more amenable to inflammatory processes than any other part of the gastro-intestinal tract. The rate of progress of the intestinal contents is directly proportional to their toxicity, but the intestinal bacterial flora are inversely proportional, both in number and in virulence, to the digestive activity. The acid reaction in the stomach and terminal ileum is probably protective in character, and the ileum is rarely involved in the non-specific inflammatory processes which affect the colon. Inflammations are more frequent in the colon where the opportunities for trauma are greatest, owing to the character of the material, to the presence of great quantities of bacteria, and to the fact that the protective elements are directly proportional to the digestive powers. Constipation is probably a great factor in causing trauma to the colon, and the lesions are often most marked in the cecum and sigmoid. Colitis may be secondary to certain diseases which lower the resistance of the patient, with probably some toxic effect on the mucous membrane, which allows bacterial invasion. When the colitis is not a secondary complication of some other disease, it is probably initiated by a change in the chemical reaction of the intestinal contents or a change in the activity and pathogenicity of the intestinal bacteria. In some patients the opsonic index and agglutination tests show a lowered resistance to the bacillus coli. An additional factor is the fact that the colon may act as an excretory organ, as is shown in the lesions following mercury or lead poisoning, and is suggestive by the frequency of ulceration in uraemia. Flexner found that the toxin of the Shiga bacillus, injected intravenously, caused ulceration of the colon.

The disease variously described as idiopathic, infectious or ulcerative colitis is an inflammation of the mucous membrane of the colon, probably due to bacterial invasion. The actual nature of its genesis is not definitely understood. Sometimes it appears to be grafted on a previous specific dysentery, either bacillary or amebic, where these organisms disappear, leaving an inflammatory process carried on by a mixed infection of the ordinary bacteria in the intestine. Sometimes it appears as a sequel to some infectious diseases, such as measles, diphtheria, influenza, and pneumonia. It may occur in patients with general debility, ill health, overwork, or poor nutrition. On the other hand, a severe fulminating acute type is described as occurring in individuals in perfect health. The disease is remarkable for its remissions, and the intermittency does not suggest a repeated invasion by a specific micro-organism. It may start as a mild catarrhal inflammation, giving the symptoms of the so-called mucous colitis and with remissions become a more severe inflammation with mucus, blood, and pus in the stools. Finally, after repeated attacks with recurrent infection and an attempt at healing progressing simultaneously, this results in the condition known as the chronic ulcerative colitis of Hale White, which is somewhat comparable to a chronic diffuse nephritis, which develops after repeated injury to the kidney, complicated by attempts at repair. When this process is fully developed in the colon it probably can never heal spontaneously.

Occasionally one sees patients who suddenly develop an acute fulminating inflammation of the colon, with marked destruction of mucous membrane and profuse hemorrhage. In this case the patient may succumb in a comparatively short time, due probably to the toxicity resulting from a rapid rate of absorption rather than from the severity of the local infection.

In the differential diagnosis of chronic ulcerative colitis, the following conditions must be considered: (1) Diarrheas, due to faulty assimilation of food; those of nervous origin, and those due to general debility in diseases, such as pernicious anemia, tuberculosis, heart disease, nephritis etc. (2) Carcinoma of the rectum or colon. (3) Chronic bacillary or amebic dysentery. (4) Tuberculous entero-colitis. (5) Diverticulitis. The pathology of the above conditions is well known and need not be considered here.

In the acute stages of colitis the mucous membrane is edematous, dark red, granular or bosselated in appearance. A profuse exudate, forming a pseudomembrane, may be found. The mucous membrane appears to be lifted away from its subjacent structures. There may be no circumscribed ulcers, but the entire mucous membrane of the colon may show a confluent process of erosion. As the acuteness diminishes, the mucous membrane is less edematous

and covered by irregular patches of exudate. Between the patches are irregular oblong ulcers, varying in size and depth, with overhanging edges and worm-eaten bases. If the inflammation subsides the mucous membrane becomes pale, and certain areas separated by an arterio-venous network, gives to the bowel a checkerboard appearance. It retains for some time its granular character and bleeds easily if touched. In chronic ulcerative colitis the lesions are usually most marked in the rectum and sigmoid. Here the mucous membrane may be almost completely denuded, leaving a granular, bleeding surface and marked thickening and fibrosis of the wall. In other parts of the colon various stages of ulceration may be found. The mucous membrane becomes adherent to the muscular coat and loses the elasticity of motion characteristic of a normal bowel. If the inflammatory process is severe, deep ulcers going on to perforation may develop, but in this condition only a localized and not a generalized peritonitis usually results. One of the chief characteristics is the extreme thickening of the wall of the colon with smoothing out of the folds, leaving a glazed surface. This marked thickening is first due to hyperplasia, edema and infiltration in the mucosa, and later to fibrosis in the wall. Later, contraction of the fibrous tissue may result in a marked narrowing of the lumen, which, if localized, may result in partial obstruction. It is an interesting fact to the surgeon, if a stoma is made proximal to the infection the strictures will disappear and function will result, even when patients have multiple fistulous openings to the outside.

A multiple polyposis is apt to develop in chronic cases, due to localized hyperplasia of the mucous membrane. This condition may cause some annoyance to the surgeon when he attempts to close a colostomy. The appendix has received more than its share of suspicion in these conditions; it often shows an inflammatory process similar to and probably always secondary to the colitis. The ileum is practically never involved. The histopathology is perhaps more variable than the gross pathology, yet it presents merely the simple picture of acute, subacute or chronic inflammation, depending upon the stage of the process. The mucous membrane and subjacent structures are usually involved. Congestion and edema may be limited to the mucosa, submucosa, or may involve the entire intestinal wall. The mucosa may be covered with an exudate composed of pus cells, bacteria, and inflammatory elements. It may be devoid of glands in case necrosis has progressed. Lymphocytic and plasma cell infiltration of varying degrees may involve the mucosa or the entire colon and its peritoneal covering. There is usually marked fibrosis with thickening of the wall, but areas may be found where the wall is almost reduced to the thinness of tissue-paper.

The other organs of the body show nothing of any significance in relation to the colitis. The fact that patients with chronic ulcerative colitis retain their weight and are healthy, except for the colitis, shows a negligible amount of toxic absorption, as compared with certain acute cases. Perforation, with localized peritonitis and paralytic ileus, is probably the most common cause of death.

DISCUSSION

GEORGE DOCK, M. D. (Chamber of Commerce Building, Pasadena)—Doctor Smith describes one kind of pathologist, but there is another kind—the physician who deals with sick people and who should have the foundation furnished by pathology. In his mind's eye he tries to see the processes taking place in the human body. From his training at the autopsy, on the living body or post mortem, he keeps active his criticism and knows how he may be wrong, but he and his patient with some form of colitis, both profit from this habit of thinking in terms of pathology. This kind of physician does not abuse his mind by calling diseases idiopathic. He uses classifications merely as a convenience and he may gain by using the one Smith gives, but he keeps his etiological sense active by constantly working on the causes or conditions of disease. By doing that, Kartulis, Flexner, and others added to our knowledge, as others may do in the future. This sort of doctor does not think that the whole "difference of the various forms of colitis is in the degree of inflammatory process," as shown by such diverse conditions as a well-marked mucous colitis on the one hand and a chronic non-anemic process on the other. This sort of a doctor will profit by the efforts of others to clarify knowledge or stimulate thought, including the essay of Doctor Smith.

J. MARION READ, M. D. (Flood Building, San Francisco)—Doctor Smith has performed a very useful function by his endeavor to elucidate the pathological conditions found in colitis. From a clinical viewpoint we would have preferred he had separated his material into two classes, representing the acute and chronic types, for the clinical picture differs considerably in the two conditions. In the acute form it is probable that bacterial infection plays the chief role; in fact, is the causative agent, and the accompanying clinical and pathological picture is one of an acute infection. It is the chronic form which the average internist sees most often, in fact, quite frequently. This rarely follows the acute type, but is insidious in its onset, and most obstinate in its response to therapy. It seems probable that infection plays a secondary role to mechanical factors in these cases. A good, working classification of colitis is much needed, and a pathological study may afford us one, but the subject is a difficult one upon which to obtain material for study, as colitis is so infrequently a cause of death.

RAWSON J. PICKARD, M. D. (Watts Building, San Diego)—It is, unfortunately, true of cases of chronic colitis that, after exhaustive searches for specific or for unusually virulent organisms, there is a large residue of cases with unknown etiology for which the term "idiopathic" covers our ignorance. Smith's paper is valuable in pointing out the area yet to be explored. His suggestion as to the chemical nature of these cases, even the possibility of injury from the excretory function of the colon, may lead to discovery.

Perhaps analogy will assist us in a conception of the causation and treatment of these cases. Chronic flagellate infections are often encountered resistant to all the many antiparasiticides which are cleared up by a change in the chemistry of the intestine through diet, with or without the feeding of bacterial cultures. Empiric treatment indicates that the basis of persistent flagellate infection may reside in an obscure biochemical state. Whether, in colitis cases, a pathogenic flora, acquired virulence of normal flora, or the chemical habitat from the diet precede, is of less moment than the result. Of course, with the destruction present in old cases of colitis there can be no return to normal.

DOCTOR SMITH (closing)—I am sorry that the pathologists have not had the opportunity to demonstrate to Doctor Dock lesions in the colon that are as characteristic as the clinical symptoms in the different types of colitis. In a case that we have just studied, the patient clinically had "mucous colitis" at intervals over a period of twenty-six years and finally died, presenting the characteristic clinical and pathological picture of chronic ulcerative colitis. I wish to emphasize the fact that the gross and microscopic appearance does not begin to explain the etiology of these types of colitis, but merely shows a difference in the degree or stage of the inflammatory reaction. Bacteriological studies have also failed, so we must look further. Realizing this, I do not sponsor the idiopathogenesis of any disease.

RECOGNITION OF SURGICAL DISEASES OF THE GALL-BLADDER

By CHARLES S. JAMES, M. D., *Los Angeles*

I believe firmly that the typhoid and colon bacilli are the chief instigators of gall-bladder disease.

I further hold that all cases of gall-bladder disease are primarily medical cases.

The belief was formerly prevalent that "latent gall-stones" cause no appreciable disturbance; but it is now recognized that they rarely fail to produce symptoms commonly referred to the stomach.

We should not accept the diagnosis "nervous dyspepsia," "acute indigestion," "neuralgia of the stomach," "gastritis" or "gastric neurosis" so frequently as we do in patients presenting the history of dyspepsia of a chronic resistant type.

DISCUSSION by *James A. Mattison, Soldiers' Home, Los Angeles County; Sterling Bunnell, San Francisco.*

THE various surgical diseases of the gall-bladder and ducts will be better understood if we consider and accept the underlying etiological factor to be infection; that the infection is of hematogenous transmission through the portal vein or hepatic artery; and that the reaction of the infection primarily is in the walls of the gall-bladder.

I firmly believe that the typhoid and colon bacilli are the chief instigators of gall-bladder disease.

I further hold that all cases of gall-bladder disease are primarily medical cases with the possibility of complications developing or arising of a surgical character, and after surgical intervention and the correction of the surgical phase, the patient again becomes medical in the sense that the individual should be under competent management and observation until a complete maintained re-establishment of health is had and not discharged as cured immediately upon making "an operative recovery," as *is too often the case.*

If we accept the primary etiological factor to be bacterial, it is easier for us to account for the diseases of the gall-bladder presenting such a wide range in their degree of severity and persistence; and the occurrence of varied surgical complications with the element of too frequent apparent failure following surgical intervention, due to the uncorrected underlying and continuing infection; i. e., cholecystitis or cholangitis.

It is then almost entirely the complications and sequela of this underlying disease that constitute the surgical diseases of the gall-bladder and ducts, the most frequent of which are chronic resisting cholecystitis—cholelithiasis—suppurative cholangitis and empyema of the gall-bladder. Carcinoma of the gall-bladder and ducts is increasing in its recognized frequency.

The belief was formerly prevalent that "latent gall-stones" cause no appreciable disturbance; but it is now recognized that they rarely fail to produce symptoms commonly referred to the stomach—sudden attacks of indigestion with flatulence at irregular intervals, ofttimes nocturnal, with indefinite right-sided tenderness, or slight distress referred to the right shoulder and variable degrees of acholia. This group of hazy subjective symptoms may characterize a type of "stomach trouble" occurring years before.

The diagnosis in many instances rests more on the thorough careful painstaking history than upon any other one factor. In a case of "chronic dyspepsia" characterized by pressure distress, accumulation of gas in the upper abdomen, eructation and sour regurgitation occurring promptly after eating a heavy meal or some special food, epigastric distress radiating to the back or the tip of the right shoulder-blade (Boas' area), history of attacks of acute indigestion with or without a colicky phase, and with or without varying acholia, one is strongly inclined to the opinion of gall-bladder disease origin and recall the trite saying of our clinical forefathers, "Fat, fair, and forty."

Boas' point tenderness and pain referred to the right back are common and valuable symptoms, but we must recognize their occurrence from other lesions than gall-bladder disease, and also that this pain is sometimes referred to similar locations on the left side. I mention this fact because the profession is educated to exclude gall-bladder pathology when pain is referred to the left.

Gall-stones may be present for years and recognized for the first time on the operating table or at autopsy. "Latent gall-stones" constantly pass recognition, and it is only when associated with the varied degrees of activated cholecystitis or cholangitis that they are considered.

We should not accept the diagnosis "nervous dyspepsia," "acute indigestion," "neuralgia of the stomach," "gastritis," or "gastric neurosis" so frequently as we do in patients presenting the history of dyspepsia of a chronic resistant type, and we should remember that all these cases occurring during the third and fourth decade, or later, with a preceding period of immunity, in general, suggest gall-bladder disease, or possibly cardiorenalvascular disease, or carcinoma, and is worthy of our most exhaustive investigation.

In order to definitely diagnose disease of the gall-bladder, one requires more than a history of reflex gastric symptoms; he must, by examination, determine localizing symptoms, such as the colic of cholelithiasis or the pain and tenderness of cholecystitis or cholangitis, and it is here that we must rely largely on the older diagnostic measures.

Distention and tenderness in varying degrees constitute probably the most constant clinical localized expression of cholecystitis. The distention is determined by the varied forms of palpation. A palpable gall-bladder is usually a pathological one, usually moves with respiration and is movable only in a small segment of the circle, the center of which is at the point of the gall-bladder attachment at the external tip of the ninth costal cartilage. Tenderness is best elicited by deep thumb or finger-tip pressure maintained during complete respiration and expiration or "respiratory arrest test." A test for tenderness that I have found quite reliable is similar to the stroke test of Murphy for kidney tenderness, but is applied in a similar manner anterior and just over the tip of the ninth rib, with the patient either in the supine or sitting position; which, if positive, causes a sharp decisive pain with its origin in the gall-bladder.

Jaundice is a variable symptom in gall-bladder disease; obstruction at the first or second portion of the cystic duct will result in no jaundice; if

in the terminal portion, there may be a variable amount of jaundice, depending on the amount of pressure upon the hepatic or common duct, or the degree of associated cholangitis present. With obstruction in the common duct, jaundice may vary, for obvious reasons, from slight and transient to persistent and severe.

Again, we may have the so-called ball-valve acting stone in the common duct with associated paroxysmal chills, fever, and sweating (*Charcot's fever*) simulating empyema of the gall-bladder. But with persistent variable jaundice, bile is seldom absent from the duodenal contents in common duct-block unless the cause is carcinoma.

In suspected cases of gall-bladder diseases the urine should be frequently tested for trace of bile; for slight degrees of obstruction, not causing observable jaundice, sometimes show a trace for a short period. The examination of the stool is of value in evidencing gross acholia, more minutely determined chemically by the Schmidt bichloride test, and by laboratory methods may prove of value in aiding in the differential diagnosis of amoebic abscess of liver, membranous colitis, occult blood of ulcer or carcinoma, etc.

The radiologic examination is of value largely by exclusion of ulcer and carcinoma of the stomach and nephrolithiasis. It is true that occasionally brilliant positive results are presented in showing calculi or the presence of confirmatory indirect signs as duodenal cap indentation, adhesive distortion, or visable gall-bladder, but in general it may be said that an affirmative report is highly valuable but a negative report valueless. There is no such thing as exclusion of gall-stones by radiology.

Graham and Cole describe the phenoltetrabromphthalein test for radiologic visualization of the gall-bladder which, if clinically proven of definite value, gives promise of opening up a field of great diagnostic possibilities. The salt injected into a vein is excreted almost entirely into the bile, helping the gall-bladder to cast a shadow upon the roentgen-ray plate, recording its shape, size, and contained stones if present.

Indicative of the relative occurrence of gall-bladder disease, Blackford and Dwyer of Seattle, reporting a study of 1650 patients complaining of chronic dyspepsia, state: "The approximate relative frequency of abdominal organic disease causing dyspepsia in this series is: Gastric ulcer, 1; gastric carcinoma, 2; reflex appendix, 4; duodenal ulcer, 6; gall-bladder disease, 12"—or nearly one-half due to gall-bladder disease.

This report closely parallels my own observation and conforms to the experience of many other clinicians and should serve to stimulate our interest in the law of probability when surveying our cases of "dyspepsia" of occult origin.

In considering the differential diagnoses, the gastric diseases—ulcer, carcinoma, and syphilis—are but few in number, compared to the many extra gastric lesions producing symptoms masquerading as diseases of the stomach, for the "stomach is the alarm-clock of the human system."

A carefully taken history and thorough physical and radiologic examination usually serves to make clear the diagnosis of the intrinsic gastric lesions hereinabove mentioned; but it is with the extra gastric lesions that we find confusion and concern.

Digestive complaint may constitute the chief complaint associated with remote systemic disease, such as pulmonary tuberculosis, grave anemia, chronic pancreatitis, cardiorenalvascular disease, pelvic pathology, appendicitis, stone in the kidney or ureter, and many consultants have seen cases of tabes not relieved of their crisis by a preceding operation upon the gall-bladder.

The physical examination should serve to exclude pulmonary tuberculosis, grave anemia, cardiorenalvascular disease and other systemic diseases associated with digestive symptoms.

Among the colic-causing diseases we may cite that in chronic pancreatitis symptoms may not differ from those of gall-stones, and the two often co-exist. The pain, however, is more apt to be in the midline or referred to the left of the upper abdomen—more weight loss and the laboratory may show diminution of pancreatic enzymes.

Acute hemorrhagic pancreatitis is attended with greater collapse and rectus rigidity.

Floating kidney, with Dietl's crisis, may present urinary signs and a more movable tumor, both poles palpable and the maximum mass to the back, as compared to gall-bladder maximum to the front.

Nephrolithiasis, by the pain radiating to the pelvis and thigh, vesical irritation, urinary findings, no jaundice.

Carcinoma of the head of the pancreas presents tumor fixed and deep, loss of flesh, profound continuing jaundice, with enlargement of gall-bladder. Carcinoma of the pancreas, gall-bladder, or pyloris can be excluded, however, at times with great difficulty; nevertheless, tumor cachexia and ascites when present speak strongly for carcinoma.

The diagnosis of acute appendicitis may present considerable differential difficulties, especially if the appendix lies high or Riedel's lobe be elongated. However, the pain reference is different and rectal examination may serve to make clear the situation.

As regards the gastric symptoms reflex from the appendix, it is noted that the reflex gastric symptoms of gall-bladder disease occur promptly in ten to thirty minutes after food intake, while if of appendical origin the time elapsed is more like that pertaining to gastric or duodenal ulcer—two to four hours.

In closing I may mention a group ofttimes presenting special differential diagnostic difficulties as suppuration complicating common duct stones, empyema of the gall-bladder, necrosis and rupture with hepatic abscess, or perforation with peritonitis, all of which present gross evidence of gravity and may be classed under the medical slang phrase, "acute surgical belly," which calls for prompt surgical intervention.

Westlake Professional Building.

DISCUSSION

JAMES A. MATTISON, M. D. (Soldiers' Home, Los Angeles County)—My discussion on Doctor James' very excellent paper will be very brief.

Since all of our gall-bladders removed at operation are sent to the pathological laboratory for complete examination and report, there is no longer doubt in regard to the fact that the chief etiological factor is bacterial in origin, the infection entering the biliary tract either by direct

extension or through hematogenous or lymphatic channels. Notwithstanding that great progress has been made in diagnostic methods, it still remains a fact that the most important part of our diagnostic information is derived from a careful study of a thorough history of the case.

In making a differential diagnosis of gall bladder disease, gastric and duodenal ulcers are among the conditions which call for the most careful consideration. Here, again, we find a carefully taken history of first importance, and in differentiating the intra-gastric diseases the most important aid which we have at our command is the x-ray. This gives us definite information in from 90 to 95 per cent of cases of gastric ulcer, provided it is in the hands of an expert roentgenologist. It is generally conceded, however, that the x-ray in gall-bladder disease furnishes confirmatory evidence rather than definite evidence. From our experience, I have found a careful study of the gastro-intestinal tract with a large series of x-ray plates is likewise of value in the diagnosis of gall-bladder disease, aside from the information furnished of intra-gastric conditions.

In our study of gall-bladder conditions, it is necessary to constantly keep in mind the fact, too, that the association of peptic ulcer and cholecystitis and chronic appendicitis is comparatively common and, in a certain number of cases, may be the cause of considerable confusion, especially where two or even three of these conditions are associated in the same patient.

STERLING BUNNELL, M. D. (Physicians Building, San Francisco)—The ideas expressed in this most commendable paper appeal to me as the true conception of cholecystitis. Instead of thinking in terms of gall-stone disease and recognizing only veteran cases, we are learning to recognize infections of the gall-bladder in their incipiency.

We now know that the infection is not limited to the gall-bladder, but is generalized in the biliary tract, through the gall-bladder ducts, pancreas, accompanying lymph glands and liver, and that it usually results from germ bombardment coming from infections in the portal system.

Removing the principal focus, the walls of the gall-bladder, by cholecystectomy, together with the original source of infection, if still present, usually cures, but for the following reasons it is not surprising that it does not always do so:

Several months to a year or more are necessary for the natural protective forces of the body to rid the rest of the biliary tract of infection, and especially so if deep-seated infection exists in the head of the pancreas or liver. Again, time is necessary for normal function to return in a stomach which has acquired the indigestion habit. Frequently enough after cholecystectomy the resulting adhesions pull on the pylorus or trigger-point of the stomach and cause a persistence of symptoms. Avoiding trauma in operation and routinely anchoring the end of the omentum in the duodenal-hepatic angle helps to prevent this.

Often tiny stones and sand in the common duct are overlooked, as it is impossible to palpate them through the duct walls. These cause a backfire of infection into the liver and continue the symptoms.

Disease of the gall-bladder makes its presence known to the clinician largely by a perversion of stomach functions, by general symptoms of infection, by disturbances of bile flow, by pain from duct obstruction, by pain, distress and tenderness from local infection in the gall-bladder.

The normal-acting stomach should handle the usual articles of diet and, if it does not, an organic lesion is often the cause. It is unsafe, though, to yield to our desire to simplify and assume that all dyspepsias are caused by the arch triumvirate, appendicitis, cholecystitis and peptic ulcer. When we consider what a multitude of diseases affect our outer covering, the skin, a tissue that we can see, we cannot but admit that our inner lining, the digestive tract, may also be subject to many different ailments.

However, when a patient tells of years of indigestion and of submission to prescribed diet lists and digestive aids, the real cause can usually be found in one or more of the above triumverate. If the indigestion is qualitative, intermittent, gradually increasing in severity and length of attacks and accompanied by symptoms of infection, both general and local, in the region of the gall-bladder, this organ comes decidedly under suspicion.

It is, however, only after a survey of all other symptoms, x-ray findings, physical signs and past history, and a due consideration of other possibilities, that we can arrive at a judgment of the case of sufficient value to advise surgical relief.

THE REFLEX NERVOUS DISORDERS AS DESCRIBED BY BABINSKI

By A. R. TIMME, M. D., *Los Angeles*

Sets up a group of nervous disorders which may not be classified as either functional or organic by usual methods. One case report.

These patients exhibit symptoms far more profound than could be accounted for on a functional basis, and yet not typical of any of the so-called peripheral or central lesions.

DISCUSSION *by Harold W. Wright, San Francisco; Samuel D. Ingham, Los Angeles; Edward W. Twitchell, San Francisco; Thomas J. Orbison, Los Angeles.*

WE HAVE long been accustomed to labeling as functional any case of paralysis that did not show classical symptoms of definite organic lesion of the nervous system. Thus, localization and grouping of signs indicated to us whether a lesion was in a peripheral nerve, in a plexus, spinal root, spinal cord, or anywhere up to and including the cortex, or in an artery, or in the meninges. Any case of paralysis or deformity that would not fit into any of the above molds was very likely to be classified as functional or hysterical.

There is, however, a group of cases, definitely organic, that do not fall into either of the above categories, i. e., these patients exhibit symptoms far more profound than could be accounted for on a functional basis, and yet not typical of any of the so-called peripheral or central lesions.

Although not explaining the pathology of the lesion, John Hunter, as early as 1835, called attention to muscular atrophy following joint affections, e. g., arthritis. Charcot and Vulpian in the eighties first predicated a reflex origin of such atrophies. Babinski, in the beginning of the Great War, finally gave us an adequate description of this type of lesion, in the form of papers, discussions, and an elaborate monograph. He terms the condition "nervous troubles of a reflex order" or "reflex nervous disorders" and postulates a reflex pathogenesis in certain cases of paralysis, contracture and deformity, atrophy, sensory and vasomotor change following wound or injury of an extremity that do not conform to any of the classical conceptions of central or peripheral lesion of the nervous system or to hysteria. Thus, an almost negligible wound of an extremity can give rise to profound changes in muscular tone and activity, can produce a disproportionate amount of atrophy with vasomotor and sensory disturbance, or it can produce a marked deformity or contracture. These changes cannot be explained by any of the known nerve, cord or brain lesions; they remain in a stationary or progressive state for years after the initial wound or injury has healed.

Prerequisite to the development of the above symptoms is the initial trauma or irritation, whether

an arthritis, a fracture of a long bone, or a gunshot wound. If a gunshot wound, it involves bone or soft tissues without injuring a nerve. Symptoms develop immediately after the injury or months later. They are out of all proportion to the severity of the injury, and in this respect resemble hysteria. They seem to disregard anatomical limits, but may be said roughly to appear in the same or adjacent spinal segments as the initial trauma. The following groups of symptoms are encountered:

(1) Muscular atrophy with paralysis. The atrophy is usually less marked than that of neuritis or anterior poliomyelitis and the paralysis only partial. It may involve single muscles, groups of muscles, or the entire extremity. The paralysis is of the flaccid type.

(2) Contractures and deformities. A few typical contracture deformities are described by Babinski, e. g., contracture of the pelvi-trochanteric muscles following traumatism in the region of the hip, producing a typical "salutation gait"; flexion contracture of the leg, in which the heel remains raised both in standing and walking; various types of club-foot and claw-toes; numerous forms of contractures of the hand and fingers, including the typical "accoucheur's hand"; hypertonus of the flexors of the hand associated with hypotonus of the extensors, producing a strong wrist-drop deformity; and many others.

(3) Vasomotor and temperature changes. The affected limb is blue and cold and responds to air or water temperature variations more slowly than the sound limb. It may also be mottled and reddish and pit on pressure. Arterial pulsations may be weaker in the affected member and the oscillations of decreased amplitude. Obstinate coldness of the hand or foot is the rule in cold weather.

(4) Hyperexcitability of the muscle to percussion, together with slowness of the muscular contraction resulting, are described by Babinski. On striking the belly of the affected muscle with a small percussion hammer, a contraction of great amplitude is produced, which is sustained longer than normal. Babinski has demonstrated this graphically.

(5) Loss of muscular tone may be pronounced in the affected muscle groups. Thus the thigh may be hyperflexed on the body, with the leg extended, or with the leg itself hyperflexed on the thigh, producing an exaggerated letter "Z."

(6) Electrical changes. There may be increased response, i. e., contractions of increased amplitude to both galvanic and faradic currents, or there may be a corresponding hypoexcitability. Babinski also describes premature fusion of contractions to the faradic current. True R. D. is never present.

(7) Changes in reflexes. Tendon reflexes are normal or exaggerated on the affected side. Sometimes the exaggeration can be demonstrated only while the patient is anesthetized.

(8) Sensory changes are inconstant and may assume the form of a hyper or hypoesthesia, frequently of a segmentary distribution. Spontaneous pain in the affected area is also frequently encountered.

In differential diagnosis the chief source of trouble is hysteria, since these cases do not conform to the symptomatology of any of the known anatomical lesions. A valuable aid in establishing a diagnosis of reflex disorder is examination during chloroform anesthesia. In this state the tendon reflexes become definitely exaggerated on the affected side, attempt to correct the deformity causes muscular spasm, and the contracture persists to an advanced stage of the narcosis. These signs are not true of hysteria. The deformity of reflex disorders also persists during sleep. Other differences are as follows: The paralysis in reflex disorders is more limited in extent and more persistent; the deformities do not correspond to any natural attitude as they do in hysteria; atrophy, vasomotor, and trophic changes are more

marked in reflex disorders; changes in muscular tone are more pronounced than in hysteria; electrical reactions and reflexes are normal in hysteria, but affected in reflex disorders.

Differentiation from organic monoplegia and from peripheral neuritis is easier, since it calls into play our knowledge of anatomy and nerve distribution. The well-known Babinski reflex is never present in these cases, nor are any of the typical signs of upper-motor-neurone lesion. The location of pain, wasting of muscles, R. D. and correlation of motor and sensory symptoms serve to distinguish a peripheral neuritis.

Volkmann's ischemic paralysis and Dupuytren's contracture sometimes produce deformities similar to those of reflex disorders, but the muscular induration and lack of electrical reaction in the Volkmann lesion, the nodular change in the palmar skin and fascia in the Dupuytren lesion serve as valuable diagnostic points.

As to pathogenesis, Charcot first postulated a reflex origin of the atrophy incident to an arthritis—a peripheral irritation of centripetal nerves in the joint by the inflammatory process, causing an irritation of the anterior horn motor cells, with a resultant atrophy. This reflex arc is called into play in the cases under discussion, Babinski maintains, and so not only furnishes a rational explanation of causation, but also includes these disorders in the organic category. As yet, however, actual histologi-

cal change in the anterior horn cells has not been demonstrated.

PROGNOSIS AND TREATMENT

Since reflex disorders are an undoubted organic condition, psychotherapy has no place in their treatment, except insofar as hysterical symptoms are superimposed. Babinski reports improvement following gentle massage and movement and continuous extension. He cautions against violent and energetic means which are likely to increase the deformity by causing further irritation of the reflex arc. He reports favorable results with mild applications of heat and diathermy. Certain heroic measures have been tried, such as alcohol injections into nerves, excision of the scar tissue of the initial trauma, a destruction of the periarterial plexuses of sympathetic filaments, all with more or less indifferent results.

CASE REPORT

W. R. W. Age 40. Received a through and through wound of the left wrist by a machine gun bullet in December, 1915. The bullet entered the dorsum of the wrist near the head of the radius and emerged from the palmar aspect near the base of the last metacarpal. No infection occurred and the scars are at present barely visible. A plaster cast was applied the following day and remained on about three months without causing any undue discomfort. The cast extended from the base of the metatarsals half-way to the elbow. Flexion contracture of the fingers began almost immediately following the injury, and when the cast was removed the fingers were half closed. This contracture has been progressive to date, in spite of the application during 1917 and 1918 of a large palmar splint designed to maintain the fingers in extension. The flexor pull of the fingers against this splint caused marked pain.

Today the last three fingers of the left hand are so tightly drawn against the palm that the distal ends of the middle phalanges bid fair to crowd through the skin of the fingers. There is beginning slight erosion of the skin of the palm. The third and fifth fingers override the fourth. Forcible extension of the fingers away from the palm is impossible to an extent greater than one inch. Motion at the wrist, of the thumb and index finger is practically unimpaired. There is slight atrophy of the hypothenar eminence. There is one-quarter inch atrophy at the wrist and one-half inch at the forearm. Other movements of the upper extremity are unimpaired. The tendon reflexes are equal to those in the right arm. There is no R. D., in fact, response to the faradic and to K. C. C. is even more prompt than in the right forearm. Direct muscular excitability is about equal in the two forearms and in the two thenar eminences. There is no sensory change. There is obstinate cyanosis and hypothermia in cold weather and after immersion in cold water. There is, at such times, decreased amplitude of the radial pulsations.

General physical and neurological examination is otherwise negative.

Other conditions to be considered in this case are: (1) ulnar neuritis, since the ulnar side is chiefly involved, (2) Volkmann's ischemic paralysis, (3) Dupuytren's contracture, (4) hysteria. Ulnar neuritis is ruled out by absence of typical atrophy and sensory change. Volkmann's is ruled out by absence of muscular induration and presence of electrical reaction. There is no evidence of hypertrophy of the palmar fascia or ridging of the skin of the palm, such as is seen in Dupuytren's disease. As to hysteria, it is inconceivable that a deformity of this severity or duration could be entirely functional. Furthermore, the positive vasomotor changes, the gradual progression of the deformity during eight years, the unnaturalness of the deformity, i. e., the impossibility to assume the position voluntarily, all point to an organic affection.

Brockman Building.

DISCUSSION

HAROLD W. WRIGHT, M. D. (Flood Building, San Francisco)—This paper is an important contribution as a clear summary of these forms of peculiar syndromes, following peripheral injury and because it calls attention forcibly to the features which distinguish such disorders from hysteria. The word "reflex," as applied to such symptoms and pathological conditions, is, to my mind, not very satisfactory. Nervous reflexes of manifold and peculiar nature, producing symptoms of disordered function at a distance from the place of origin of the reflex activity, we are familiar with, but such reflex disorders are disorders of function and not of structure, i. e., not lesions. In the conditions described in this paper we have definite pathological changes of tissue resulting from something besides a mere irritation of function. May it not be that in some of these disorders there has been an unrecognized infection of the end plates of motor nerve filaments, a localized neuritis at first, then irritative reflexes resulting, and possibly an ascent of the infective or toxic process to anterior horn cells with resulting irritation of other reflex paths at that level?

SAMUEL D. INGHAM, M. D. (1920 Wilshire Boulevard, Los Angeles)—The diagnosis of the conditions here presented offers much difficulty, since it is well established that certain of the functional cases, with local paralysis and contractures develop tissue changes, including joint fixations and rarefication of bone, as secondary results. On the other hand, indefinable organic and toxic conditions may affect the physical integrity of the nervous structures without producing clean-cut signs or symptoms. We frequently see atrophy of muscles that have been subjected to prolonged reflex rigidity, and that is apparently the conception of Babinski in regard to these cases.

It is impossible to say, in view of our present knowledge, whether there may not be, as Doctor Wright suggests, an absorption of toxin or even actual infection of the peripheral nerves with sufficient resulting disturbance of the innervation to explain the symptoms.

EDWARD W. TWITCHELL, M. D. (909 Hyde Street, San Francisco)—The word "reflex" is very unsatisfactory to describe the condition, and it is curious that Babinski, with his genius for naming symptoms, did not devise a name free from the old associations inseparable from "reflex." He was alive to the possibility of the role that the autonomic system might play in these cases and spoke of it in his monograph. That seems to me to be the most nearly adequate explanation for the present. If a causalgia be the expression of the sensory manifestations of sympathetic diseases, why may not this irritation extend to the trophic and motor fibers of the same system? Why is a contracture in the case described not due to stimulation of a reflex arc contained entirely within the system of sympathetic fibers efferent and afferent?

The paper is important in that it jars us out of our dimensional attitude toward nervous diseases and brings to our notice another dimension to which others will, no doubt, in time be added.

THOMAS J. ORBISON, M. D. (2007 Wilshire Boulevard, Los Angeles)—I do not disagree with the diagnosis made by Timme in this very interesting and well-presented case. On the contrary, I am inclined to concur in it. But there are two or three points that need to be cleared up. One is that this man has never been subjected to chloroform anaesthesia—at least no mention has been made of this. It would seem to me that this would give the real clue that would enable a correct diagnosis.

The other point is that I noticed that quite a marked extension could be obtained when, in my examination of the patient, moderate, but sustained traction in extension was made on the fingers. This seemed to tire, and I noted a more or less rhythmical attempt at maintaining the original posture, which attempts came with less force at the end of the short time I made traction. A third point should be borne in mind, namely, that his hand remained in a splint for three months. In my opinion

this man should have been anesthetized quite early in order to make diagnosis certain.

DOCTOR TIMME (closing)—The strongest criticism encountered by Babinski, when he formulated this concept, was from those who clung to the hysterical explanation for such cases as these. But in this case hysteria would be a diagnosis by elimination, rather than a positive one. We have all been too prone to call a thing functional if it does not fit into the known organic pictures. After all, the tendency of medical research is to increase the number of "organic pictures."

Among many wounds of extremities in American troops, I have encountered only two of these cases, whereas the French found them with much greater frequency.

I have been unable to find any pathological reports whatever, but I have no doubt that some alteration in structure will be seen somewhere between anterior horn cells and motor end-plates.

The sympathetic fibers are, no doubt, always involved, as shown by the vasomotor and trophic changes. But there is no evidence as yet that striped muscle has any sympathetic innervation, or at least that sympathetic stimuli can produce striped muscle spasm.

This man had moderate and sustained traction by means of splints for nearly two years, but the deformity persisted and advanced. This speaks for a powerful irritative factor at work. A splint deformity does not act this way.

Let us keep this concept of reflex disorder in mind. Perhaps many doubtful and borderline cases can, in the future, be so explained.

A Clinical Classification of Bright's Disease—Thomas Addis, San Francisco (Journal A. M. A.), made a study of the effect of various physical factors on the formed elements of the urine. He found that hyaline casts and all casts whose matrix was hyaline disappeared from neutral sodium chlorid solutions when the salt concentration was reduced to less than 0.5 per cent. When the hydrogen ion concentration of the solution was varied, it was observed that the less the hydrogen ion concentration the greater was the concentration of sodium chlorid necessary to keep the casts from dissolving. He had already noticed that those specimens of urine in which few or no casts were present were either dilute or alkaline or had both of these properties in lesser degree. It seemed likely, therefore, that variability was no inherent characteristic of cast formation, but might be the result of changes in the degree of dilution and reaction of the urine. This proved to be the case, since the variability was replaced by a satisfactory degree of constancy whenever the conditions were such as to induce the secretion of concentrated and acid urine. The results of the examination of the urinary sediments of the patients who were investigated fall, naturally, on qualitative as well as on quantitative grounds, into three main divisions; and since these divisions seem to be corroborated by many significant facts elicited by other methods of examination, Addis has become persuaded that they represent three diseases that are pathologically and etiologically distinct and separate. In order to avoid the confusion that would result from the use of terms that are familiar but have been used with a somewhat different meaning, he has reverted to a purely descriptive terminology and has called the first division hemorrhagic Bright's disease (seventy-one cases), the second degenerative Bright's disease (forty-three cases), and the third arteriosclerotic Bright's disease (twenty-six cases). The initial stage is a sequel of streptococcal infections. The second disease has been called degenerative Bright's disease because the constant and most prominent feature of the sediment is the large number of apithelial cells in various stages of granular or fatty degeneration. The third disease, arteriosclerotic Bright's disease, is of great importance because it occurs more frequently than any other form of Bright's diseas. But so far as the kidney is concerned, its importance is of a negative character; for when the diagnosis has been made it is no longer necessary to consider the renal lesion as a factor in the management of the patient. These are the patients with hypertension who are often told that they are suffering from "chronic interstitial nephritis" and who consequently live in fear of death in uremia that never comes. These conditions are described in detail.

Clinical Notes and Case Reports

UNUSUALLY EXTENSIVE INJURY

REPORT OF A CASE

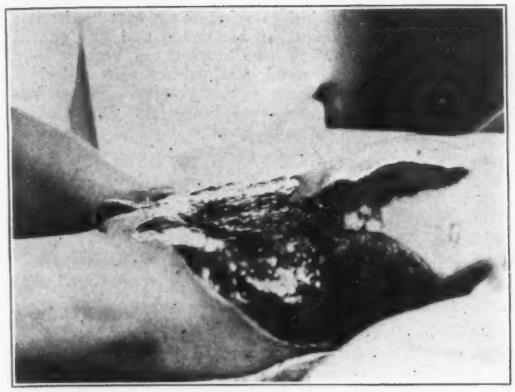
By S. M. SPROAT, M. D., *Portola, California*

A. O., age 22. Mill laborer, single, was brought to the Sierra Valley Hospital at Loyalton July 28, 1925, suffering from avulsion of the entire scrotum, skin, and subcutaneous tissues of the entire penis, abdomen, and left side, with testicles entirely denuded, and lying on the abdomen. The patient had been caught in the live rollers of the mill at 7:45 a. m., and was bleeding profusely and suffering profoundly from shock when seen at 10 a. m. in consultation with Dr. W. A. Lavery of Loyalton. Pulse 135, weak, thready; blood pressure, systolic, 90.

The patient was at once removed to the operating-room, anesthetized, and the entire area scrubbed with a scrubbing-brush and tincture green soap and water, after which sterile water was poured over the entire area. The testicles were placed in an artificial scrotum formed

by flaps from the inner sides of the thighs. The flaps were united in the midline with sutures of silkworm gut, leaving the perineum resembling that of a female. The penis was repaired and covered with skin drawn back from the foreskin which covered the distal end of the penis and which had escaped injury. The proximal end of the penis was covered with skin which had been avulsed from the abdomen and placed around it in a spiral manner. This graft did not live. The abdomen was covered, to a large extent, by bringing in large skin flaps from the surrounding healthy skin, and also by one large flap, which had been torn off. The skin which had been avulsed did not live, nor was it expected that it would live at the time of operation, but it was thought advisable to cover as much raw area at this time as possible on account of the likelihood of this lessening, to some extent, the marked shock which was present, and it evidently served this purpose.

For about ten days the patient had a stormy conva-



lescence, but after two weeks was out of danger and making a nice recovery. The photographs were taken August 20, and upon August 29 an extensive skin graft was done by Dr. Lavery and myself by the Thiersh method. This has taken well for the most part, and the patient is well on the road to a complete recovery.

This case is of interest because of the extensive injury, of which the pictures give only a small idea, and from the fact that recovery was made after such an injury involving such a tremendous area and severely injuring the testicles, scrotum and penis, and producing severe shock.

CONGENITAL CYSTIC KIDNEY

A CASE REPORT

By WALTER PRITCHARD, M. D., *Colton, California*

J. M. B. Teacher, single, age 40. In October, 1923, complained of cramps in the right loin for five days, with fever, headache, and vomiting.

One sister had a "cystic kidney" excised during her forties; the diagnosis was made after operation. Another sister, now in her fifties, is pale and puffy in the face, but repeated urine examinations fail to confirm the suspicion of nephritis.

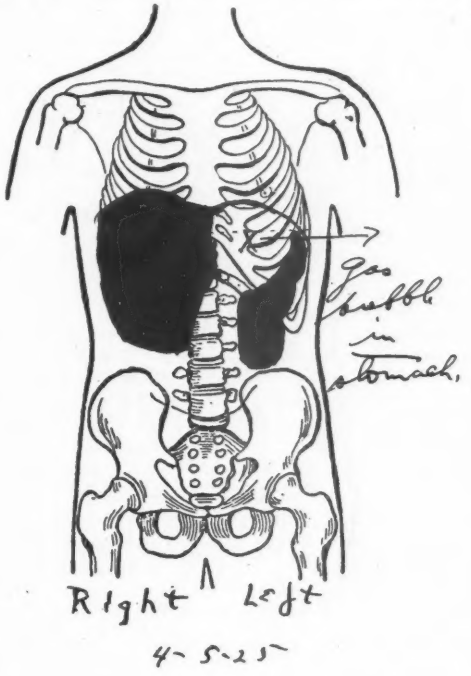
For twenty years the patient had had attacks of colic in the right loin, with belching, bloating, headache, and fever, lasting a few days and occurring a few months apart. Between the attacks he had diffuse headaches. Fifteen years ago he bruised the left loin in a fall. He had "meningitis" twelve years ago. For several years, ending five years ago, he had "pyelitis and nephritis," a systolic blood pressure of 200, and took urotropin daily.

P. E.—The patient was of average weight and development; temperature, 98.4; pulse, regular 80; blood pressure, 140/90. There was marked tenderness in the right loin and less on Murphy maneuver; no psoas spasm; peristalsis was active. There were 16,000 white cells, with 83 per cent polynuclears. The urine was slightly acid, clear amber, 1.018; showed a heavy trace of albumen, trace of indican, a few hyaline-granular casts, and a moderate number of red, white, and renal cells. A tentative diagnosis was made of right pyelitis and nephritis, probably an exacerbation. With rest, local hyperemia, forced fluid intake, and urotropin gr. 15 q. 4 hr., the patient became comfortable within a few days. He refused cystoscopy.

During the next year and a half the patient was seen in several attacks, and the investigations made are here summarized. He finally consented to cystoscopy, which yielded a conclusive diagnosis. Because of the fragmentary development of these investigations, chronological treatment seems better replaced with topical consideration.

Symptomatology—Pain in the loin had harassed the patient for twenty years. It had been in the right side until the past year, and then worse in the left loin. In character it suggested "a lighted candle burning in my side all the time," with cramps during the height of the attack. The pain did not radiate, and was not influenced by voiding or defecating. Nausea and vomiting, malaise and diffuse frontal headache were frequent. There was frequently a chill and febrile rise to 102, and rapid drop within a few hours. The attacks occurred at any time, beginning rapidly and lasting for hours or days, and were of varying severity. The intervals decreased from months to weeks, and even days. Gross hematuria was never seen. Nicturia once was habitual, but large amounts of urine were never passed.

Subsequent physical examinations revealed constant tenderness in both flanks, becoming exquisite during attacks. A mass was first noticed in March 27, 1925, continuous with the liver to percussion and palpation; it was firm, smooth, slightly tender, reaching downward in the right half of the abdomen to the level of the umbilicus. The sharp lower edge moved with respiration, and was continued in a rounded, firm superficial mass at the right rectus border, suggesting a distended gall-bladder, and measuring two inches across. This mass can be seen in the x-ray of April 5, 1925. A month later the topography had changed: a firm, smooth, tender mass three inches in diameter lay in the midright lower quadrant and moved with respiration, but could not be displaced. The liver edge could be felt just under the ribs. Immediately after cystoscopy, and with the bladder drained, the patient voided two quarts of urine, and this mass moved four inches cephalad.



No. 1

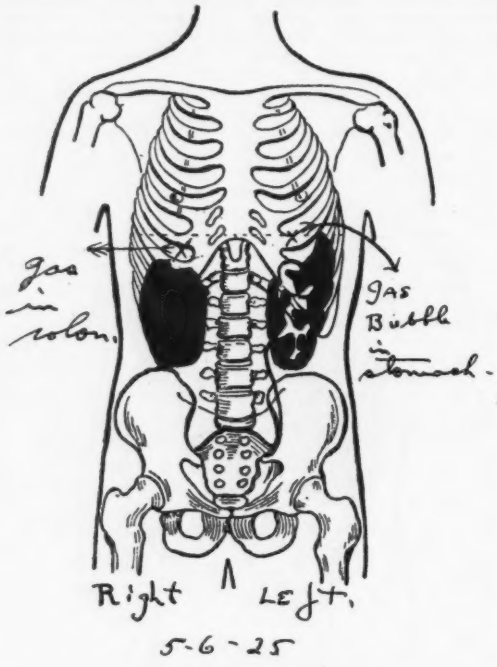
The x-ray of April 5, 1925, shows the left kidney shadow with a faintly scalloped external border, and upper pole covered by gas in the stomach. The right upper abdomen is occupied by a shadow of uniform density extending from the diaphragm to the level of the umbilicus, and from the midline to the lateral abdominal wall.

Cystoscopies—One on April 5, 1925, indicated a normal bladder, except for slightly enlarged median prostatic lobe. Normal ureteral ostia emitted turbid urine at an average rate. A No. 6 catheter easily passed to the left pelvis, but would not drain, although readily admitting water. The left pelvis admitted 12 cc. of 20 per cent sodium iodide solution, with pain characteristic of the attacks. The right ureter readily admitted a No. 5 catheter, and drained urine at an average rate. It was not thought wise to inject both kidneys at the first sitting.

On May 6, 1925, both ureters were emitting turbid urine; catheter to left pelvis, but stopped at pelvic brim in the right side. Both dropped urine rapidly. The left

side admitted 35 cc. of injection fluid readily, with pyelogram as shown. The right catheter, unfortunately, slipped out in removing the cystoscope. But the shadow of the right kidney was so plain that further examinations did not seem necessary. After intramuscular injection, phthalein appeared in twelve minutes from the right side, and in nineteen minutes from the left side.

X-rays — The pyelogram of April 5, 1925, shows the left pelvis only partly distended, with those calices shown, blunted. The pelvis is six inches long, and the kidney shadow about nine inches long by four and a half inches wide, and extends from the dome of the diaphragm to within an inch of the iliac crest. The "liver" shadow is shown, extending downward with uniform density to a sharp lower border at the level of the umbilicus. The gall-bladder region was normal in especially taken x-rays. The x-rays of May 6, 1925, show the left pelvis better distended, and the same blunted calices. The outline of the right kidney is clearly shown in the corresponding position and size, only an inch lower, reaching the iliac crest. This shadow is felt to be the right kidney because it corresponds in size and shape and position with the known left kidney; because the mass markedly shrank and moved cephalad after copious voiding; because of the varying position of the mass in the right side of the abdomen; and because a sister had a cystic kidney removed.



No. 2

The x-ray of May 6, 1925, shows the left kidney as before and with the large, imperfectly filled pelvis and calices. The right kidney occupies the corresponding position. Both are deformed above by gas in the stomach and colon.

Laboratory Data—A twenty-four-hour urine specimen was 2500 cc.; neutral; 1.010; and contained 2 per cent of albumen. On other occasions there were a few pus cells, hyaline and granular casts, and a few red and renal cells. Non-protein nitrogen 34 milligrams for 100 cc. blood. Wassermann test of the blood was negative. A complete blood examination showed nothing abnormal.

Diagnosis—Bilateral congenital systic degeneration of the kidneys.

Treatment—The patient was placed on a cardio-renal regime, and given a ptosis corset with kidney pads. It was hoped thereby to prevent kinking or rotation of the pedicles. His fluid intake was to be over 3000 cc. daily, and the urine to be kept acid six days a week; and urotropin gr. 5 taken bid. During three months, he has been free of pain, fever, or headache, and has gained fifteen pounds. Operation was discouraged because both sides were equally involved, and neither side badly infected. The bizarre masses, without typical signs of hydronephrosis (except once), were confusing. The familial character of the disease is illustrated.

TREATMENT OF OTITIS-MEDIA

By B. C. DAVIES, M. D., *Los Angeles*

In the treatment of this particular condition, both the anatomy and the nature of tissue involved demand special consideration.

Anatomically, we have a semi-closed cavity which communicates with at least two other cavities, while the part involved is relatively minute in area and difficult to reach.

The mucous membrane lining is sensitive and affords a fertile field for infection; moreover, it quickly reacts to irritants, or stimulants, and is capable of producing granulation tissue very rapidly. These findings render treatment difficult and uncertain of results under regulation procedure.

Boric-alcohol instillation goes very little farther than the opening through the tympanum, while the resultant deposit of boric acid impedes both drainage and continued treatment. Phenol-glycerine is no more satisfactory, except in early open cases.

Irrigations, of whatever nature, which contain water do not entirely pass the tympanum, but instead stimulate granulations, which eventually close the tympanic perforation and a chronic otitis-media is established, succeeded frequently by a mastoiditis.

Gentian violet, mercurochrome, acriflavine, and the rest of the newer antiseptics act well on bacteria that are reached, but their progress into the middle ear is easily impeded.

Following its successful use in other purulent conditions, I have for the last year been using pure ether in the treatment of acute and chronic otitis-media, with unvarying success, in over 125 cases. A few case histories follow:

1. Jenny C., age 8. Admitted March 13, 1924. Diagnosis, diphtheria. Acute mastoiditis, left. No operation. Both ears discharging. Boric irrigations. Phenol-glycerine. Treatment lasted five weeks, no improvement. Ether treatment started April 16, 1924. Ears dry, April 30, 1924.

2. John C., age 17. Diagnosis, measles. Ears discharging two weeks before admittance. Had been irrigated since discharge began. Ether treatment started February 13, 1924. Ears dry, February 18, 1924.

3. Mrs. W. J. E., age 47. Post-scarlet otitis-media, left. Ear had been discharging for week. Dry swab, followed by mercurochrome; no results. Ether treatment started March 25, 1924. Ear became dry April 3, 1924. Several cases practically similar cleaned up in one week.

4. James McC., age 7. Scarlet fever, otitis-media, left. Discharge began April 12, 1924. Ether treatment started same day. Dry ear April 20, 1924. Approximately fifteen cases of similar histories showed equally quick results.

5. V. W. M., age 5. Diagnosis, scarlet fever. Ears discharging three days before entry, April 7, 1924. Simple mastoidectomy, right, April 8, 1924. Wound and middle ear washed with ether at time of operation. Canal dry and wound clean, April 15, 1924. Wound healed in less than three weeks. Several cases of the same kind had been irrigated for weeks. Others had been treated with various dye solutions without success.

The technique followed was a careful swabbing, using small cotton swabs, made up fluffed on the

end. A twisting motion removed all pus in the canal and on the tympanum. Then the canal was filled with ether and that ear held uppermost while the ether evaporated. This treatment was given twice daily. In cases of very heavy discharge, the ether treatment was increased to three times daily. Upon the introduction of the ether, there is a transitory stinging which lasts but a few seconds.

The patients vary in age, from 9 months to 45 years. Five cases of wet ears, in post-operative, radical mastoidectomies that had discharged for six months following operation dried up inside of ten days, following the ether treatment.

The points of advantage in using ether are: First, its capacity to penetrate into corners and through very small apertures, as found in granulation tissue areas. Second, does not stimulate granulation tissue. Third, and most important, its rapid solvent action on lipoids, as found in pus and bacteria. No untoward results were noticed in any of the patients treated. Four post-scarlet, early mastoiditis cases were carried through without operation. However, the treatment is not suggested in lieu of operation.

In contagion wards of county hospitals, health office rules require a dry post-scarlet ear before release of the patient, and it can easily be seen that, all other considerations aside, the financial saving to the county by the early release of a large number of patients is considerable.

"Where There Is Darkness There is Disease"—"Printers' ink floods the darkest places with the light of intelligence," writes Dr. Frank Crane. "It is printers' ink that has scared the food fakers. Only at a good round of printers' ink will the vile, carrion flock of unclean birds that fatten on human credulity and ignorance take flight, they that sell plaster of paris for bread, carpenters' glue for candy, and God knows what vileness for fish, flesh, and fowl. Printers' ink has spread right ideas of sanitation, upset old, mildewed superstitions, opened windows, lured people outdoors, flooded fearsome brains with truth, and despairing hearts with hope. It has built hospitals and supports them. It has prevented epidemics, driven hush-mouth authorities to activity in remedial measures of cleansing. It is well enough to give an individual epsom salts or calomel, but what the public needs for what ails it is plenty of printers' ink. The best part of the science of medicine is that part which can be told in plain language so that the common man can understand. Every newspaper ought to have its health department edited by an intelligent physician. What people need to know is the truth about health, about food, and about simple living. The more truth they know the less useless and harmful food they will eat, and the less they will run after religious cure-alls and crazy fads."

Pyelonephritis Complicating Pregnancy After Nephrectomy—John E. Hall, Nashville, Tenn. (Journal A. M. A.), reports the management of a case of pyelonephritis occurring in a woman who became pregnant about one year after he had performed a nephrectomy on her for pyonephrosis of the left kidney. The right kidney was at all times free from infection during her illness from the left-sided pyonephrosis. Attention is called to this fact, so that it may not be supposed that the pyelonephritis developing during pregnancy was due to impairment of the right kidney from infection at the time of this pyonephrosis. The primary focus of infection responsible for the pyelonephritis could not be ascertained. The patient's tonsils were removed shortly after her nephrectomy, and her teeth and accessory sinuses were in perfect condition.

EDITORIALS

THREE YEARS OF THE CORNELL PAY CLINIC

The Cornell Pay Clinic, says its recent report, "has proved a successful demonstration of the possibility of providing good medical service on a self-supporting basis for persons of moderate means. Since these persons constitute the majority of the population, the Cornell Clinic announces itself as 'a demonstration of considerable public importance.'"

The most amazing feature of the expensive report gotten out by these promoters of department-store practice of medicine is that they are apparently proud of the fact that they can successfully compete with private doctors with the "majority of the population."

Their report announces with apparent gusto that, whereas other pay clinics, some of which are enumerated, do serve some poor people free, the Cornell Clinic absolutely refuses charity because it was feared the Clinic would be "swamped by non-paying patients" unless service was "limited to those who could pay its fees." *In other words, this clinic is in the practice of medicine for fees precisely as are private physicians.* They are so cold-blooded about it that they refuse any help to the poor "except in emergencies" and for purposes of "medical education and research." This, of course, gives them a tremendous advantage over the private physician who considers it his duty—and privilege—to render a large amount of free service. It even gives this corporation form of medicine advantages over the Mayo Clinic, the clinic in connection with the Ford Hospital and others they mention, in that all of these do some free work. Cornell claims a large volume of business, with an average of 18,000 new patients a year. The report shows 118,711 visits during 1922, 110,235 during 1923, and 114,705 for 1924. These, according to the report, represent about 90 per cent of those who apply for service; *the other 10 per cent are refused because of inability to pay the fees.* There is another 10 per cent who, although of doubtful financial standing, are accepted.

A Promising Business Venture — Although only in its fourth year of business, this clinic has grown financially from a deficit of $46,000 in 1921 to a self-sustaining basis in 1924, and the indications are for a substantial profit for 1925, unless some of the usual business methods of preventing such showings of profits are utilized. This is an encouraging showing, from a commercial standpoint. It is said to have taken Mr. Gary longer than this to make United States Steel a paying proposition.

Fees—The report gives the average fees paid by patients as $2.24 a visit. As an *average,* such fees ought to make the practice of medicine very profitable, particularly when it is remembered that they render no free service. Less than 20 per cent of the doctors of California—and we suspect of New York as well—*average* as much as $2.24 a visit in the practice of their profession. But, of course, they all

do free work, and most of them a large amount of it, which naturally pulls *their* average down.

Substituting salaries for fees to physicians gives corporation practice of medicine another advantage in their competition with the private fee basis of pay usually employed by the physician who practices as an individual. The Cornell Clinic report shows that they paid $90,770 as medical salaries last year. When this is considered in connection with the 114,705 patient visits, we see that they paid their doctors the bargain-counter figure of seventy-eight and a fraction cents a patient visit. Mind you, these were no "let me see your tongue" visits. Some 10 per cent of them were first visits, with a "thorough physical examination" which required "nearly three-quarters of an hour of the doctor's time," while the others were revisits requiring "ten or fifteen minutes" of the doctor's time. The report shows that the Clinic paid "non-medical salaries" equivalent to well over a dollar per patient visit. Compare that with the 78-cent doctor's fee, and draw your own conclusions. The report's apology for the "flat fee," like all similar apologies, whether emanating from a Detroit hospital, a labor union, or a government bureau, makes illuminating reading.

The various clinic "chiefs" are paid a "flat salary" of $1500 a year, which, according to the report, is for from 268 to 360 hours of their time—at most, $5 per hour. Other doctor employees are divided into two groups—one class is paid $2 an hour, and the other $2.50 an hour. They work in clinic "sessions" of two and one-half hours each, and if the doctor finishes his work in two hours he is permitted to take the other thirty minutes off, presumably on full pay. The Clinic attempts to provide these doctors working for wages all the clerical and technical help they can use, but, says the report, "where the physician is supposed to be giving his time in hospital or clinic without remuneration . . . he can be clerk as well as doctor," because this combination "saves the institution money."

In answering the question of who are their patients, the report says the average wage of the patients is $1800 a year, and that the wage-earners average "somewhat" more than one per family. The report quotes the figures of the Housing Commission of New York, to the effect that two-thirds of the families of the city have incomes under $2500 per year. Therefore, says the report, *"Potential Cornell Clinic patients represent a majority of the population of the city."* If this dream should come true before the inevitable awakening occurs, there would be left to the some 15,000 doctors—many of them Cornell graduates—a clientele of a minority of the people of the city, and *all* of the poor would be in this minority because the Cornell Clinic refuses to serve them, so the personal doctor must do so, as he always has done. Interesting, isn't it? That interest will be intensified by the well-bolstered statement of the Clinic that many of their patients "have had previous medical care without satisfactory results before coming to Cornell." We wonder if the Cornell service is so superior that their shoe might not fit the other foot with equal certainty. The report certainly indicates strongly enough what the Cornell Clinic promoters think of themselves, as compared with their own graduates with whom they are competing, when they say in effect that the great popularity of the Clinic is due to "previous unsatisfactory experiences" of their patients and to the "prominence" of the Clinic doctors, who are "leading members of the medical profession." Considerable space in the report under review is occupied in explaining, by invidious comparisons, how and why the services of the Cornell Clinic "indicate a much higher level of medical efficiency" than do similar figures from other clinics. Some ingenious philosophy and some queer figures are used to support this conclusion, which some readers will extend to a logical conclusion of interesting if not entertaining portent.

To make the claim that because many patients are added to the Clinic's happy clientele because of dissatisfaction with their former doctors is indicative of the Clinic's superior service, is likely to have another side. Surely, there must be some patients—and we suspect there are many—who also became dissatisfied with the Clinic and took their patronage to a clinic competitor. Of course, the ethical doctor works at a disadvantage in this phase of competition because his idea of service does not extend to follow-up letters and personal solicitation to return by paid agents or solicitors of any kind. His contractural relations with his patient are purely personal and wholly voluntary at every stage of the contact.

The authors of this ingenious report appear to get considerable satisfaction out of invidious comparisons of the costs of service to the patient between what they are pleased to term the "commercial rates" of private doctors and their department-store prices. This part of the report reads much like advertisements published for the purpose of increasing trade, and closes with this: "From the financial standpoint, there is no question that the Cornell Clinic is offering a grade of medical service which would be far more expensive to its patients in private offices" . . . and "the family incomes of the Cornell patients are typical of the majority of the families of New York City."

Careful reading of this report of the Cornell Clinic, only a few outstanding features of which have been noted here, leaves the thoughtful reader with a variety of feelings. One is in wonder as to how many of the fifty odd thousand patients who visited the Clinic needed hospital care, including surgical work; what hospitals and what doctors were they sent to? Why? What were the expenses and who paid the bills? The chances for referred work from a large clinic that does no free work and claims the majority of citizens of New York as its legitimate customers ought to be exceedingly great.

The House of Delegates of the American Medical Association has twice disapproved as unnecessary and inadvisable, movements which appear to offer only part of what this clinic offers under similar principles and tending in the same obvious direction.

Are department-store methods and corporation practice of medicine to replace the personal service of the doctor to the patient who chooses him? We wonder. If the policies and practices of the Cornell

Clinic are sound, then many other varieties of big business medicine are sound and in the best interests of the public health. None of these activities can be considered to be local. Attempts to start Cornell Clinics have already been seen in California and presumably elsewhere. If the Cornell Clinic is the best method of caring for thousands of pay patients of New York City annually, then the principle should be extended to all classes of people throughout the country. If it is unsound, unwholesome and unwise, then physicians should say so now, and say so in no unmistakable terms.

HOSPITALS AND THE CULTISTS

Certain groups of inadequately educated "healers," acting under the protective constitutional cloak of religious liberty, have succeeded thus far in having themselves widely admitted to be "above the laws" regulating the practice of the healing art. Certain other groups of ignorant or inadequately educated healers have succeeded in California and certain other places in having the laws so modified as to allow them to license themselves to practice medicine and otherwise assume the responsibilities once the sole prerogative of specially educated professional men and women. These "doctors above the law" and "doctors by law," instead of by education, are now active in further efforts to get control of health services by invading hospitals, laboratories, public health services, clinics, etc., again using politics, legislation and law, instead of education, as the weapons for their offensive. They apparently do not wish their own hospitals for their own purposes, *because there is no objection to this,* and it seems fair to assume they are afraid of the consequences of full responsibility that operating their own hospitals would entail. They want to crowd themselves into hospitals operated for and by educated physicians, and force—by law and politics—these educated physicians to work with them as "fellow practitioners." In a word, they want the safe cloak of intelligence to produce the shadows they require to "get away" with the consequences of their ignorance.

These "sciosophists," as Doctor David Starr Jordan has grouped them in BETTER HEALTH MAGAZINE, find their best opportunities to destroy hospitals as agencies of scientific medicine among those operated by government and in the miscalled "community hospitals," better named "political hospitals."

These are the weakest links in the hospital chain. Of the some forty county and municipal hospitals in California, less than ten are even considered important enough to list. It is exceedingly doubtful if the "sciosophists" could make poorer excuses for hospitals out of most of them than they now are, and the inevitable reaction that must come before the hospitalization of the poor is upon even a decent basis might be hastened by turning the majority of county hospitals over to the "sciosophists" *exclusively.* Such action cannot, of course, be recommended, but if it occurs, as has already happened in part in a few instances, what is now a perpetual disgrace might become a tragedy of such magnitude as to jar public opinion from its complacency and too obvious indifference.

Of the small minority of acceptably operated county hospitals, "sciosophistic" efforts to burrow in must certainly be resisted. They are making a lot of noise on the cellar doors of—for example—the San Francisco and Los Angeles county hospitals. In the latter they have already secured "rights and privileges" that have placed the standing of that great hospital in jeopardy as an approved agency of scientific medicine and better health. Some of the other county hospitals are even less fortunate.

A most interesting situation is just developing in Santa Barbara county, where steps have been taken to build at Santa Maria a branch of the existing county hospital, and this branch hospital is to be "wide open"; which means that it will be, except in emergencies, an exclusively cult hospital supported by public funds. Of the misnamed "community" hospitals, the stories of efforts at Riverside and Long Beach, now familiar to readers of hospital literature everywhere, ought to prove more effective than has been the case in checking efforts to extend the application of this stupid idea. The shock troops of "sciosophy" are collecting about some of the State government and even National government hospitals, waiting and watching for an unguarded entrance. But by far the most tragic incident that has happened was the *repudiation* by plebiscite of the terms of acceptance of the gift of a memorial hospital by Colonel Simon J. Murphy to the people of Whittier. The story of this debacle has been so often and widely told that it needs no repetition here.

Fortunately, the great majority of hospitals are still in full control of intelligent persons and groups, who are not even tainted with "sciosophy" and are not likely to be. These include the more than half of all hospital beds operated by the Sisterhoods of the Catholic church; most, but not all, of those operated by other church organizations; most of those operated by philanthropic groups of one sort or another; practically all those operated by physicians; and the majority of those conducted by corporations and business organizations. Fortunately, also, the law gives to hospital directors and trustees *absolute authority to decide who may and may not have the privilege of practicing in their institutions.*

This is the most effective bloc that the "sciosophists" have to face in their campaign for hospital control. But they do not consider it hopeless and are working along three lines to overcome it. One sustained effort is to gradually change the controlling personnel to one more friendly. Another is to encourage any and all movements calculated to extend political regulation of hospitals; and another is to promote actively the "community hospital idea." The "sciosophists" know their political power and if they can get government supervision extended, or get hospitals to use in some way—any way—public funds, they believe their chances will be better—and they would be. One of the most interesting of these movements is the sustained effort to have hospitals declared *"public utilities"* and regulated accordingly. We took a long step in this direction when the present, in certain respects commendable, Department of Public Welfare Law was passed by the last Legislature, with jokers in it calculated to

plague every ethical hospital and other health agency in California in the not far distant future.

WHAT CAN BE DONE?

From the political angles, legislation and law enforcement, probably not much. Much recent legislation is immature and faddish; politics has become too much a matter of "bloc juggling" and law enforcement as a whole is at a remarkably low ebb. "Sciosophists" of the near doctor groups, while their more than fifty-seven varieties fight among themselves, seem to have little difficulty in presenting a united front to legislators, voters and other factors of "democracy in action." Opposed to them in this broad field are the intelligenzia, with every fellow holding to his own brand of treatment and opposed to any form of mass action. In that most effective of all power—moral influence—honesty, intelligence, and decency, still have the trump cards. Of these, one of the most effective is the widely accepted ethical ruling that educated doctors, nurses and other recognized health workers may not consult with, work for or with, or have anything whatever to do with any members of the "sciosophy" groups. True, some do violate the principles of their profession by doing these things, but they are well known, both to their colleagues and to much larger groups than they realize. These "twilight zoners" often slip over entirely and become unspeakable. It is from this group of intellectual backsliders that the "testimonials" for fake cures by "celebrated specialists" are recruited. It is from the same groups that "death certificate signers" for "sciosophists" come, and it is from them that leaders of new cures, cults and what not, are recruited.

The moral web was immeasurably strengthened when the American Medical Association, the American College of Surgeons, the American Hospital Association, and practically all other great health serving bodies, extended their restrictive ethics to include hospitals, clinics, and all other agencies of health as well as persons.

A hospital, for example, in order to have any sort of recognition, must limit those permitted to practice in it to persons of certain educational attainments and certain standards of morality. By the same token, a doctor who practices in a hospital with lower standards thereby becomes unethical and is out in the open for what he is. We gather from *many* letters and inquiries upon this subject that the simple facts are not as well known as they should be, and in order to further clarify and impress the subject, the following abstracts are made from recent letters from the Council on Medical Education and Hospitals of the American Medical Association; the American College of Surgeons, and the American Hospital Association to this editor and to certain hospitals (which shall be nameless) in California:

American Medical Association to W. E. Musgrave:

"The only policy to pursue from now on is to stand fast in the *requirement that no hospital will be approved under any circumstances unless it confines* membership on its staff to reputable practitioners who have received the degree of Doctor of Medicine from medical schools approved by the American Medical Association and that this ruling must apply to every person permitted to treat or prescribe for the sick in the hospital. This means that no concessions for any irregulars or incompetent practitioners shall be made whether they hold the M. D. degree or not. I feel certain that you will be in full agreement with such a stand."

American Medical Association to —— Hospital:

"The provision for such irregular practitioners in a wing of the hospital cannot, as I believe you will readily see, enable you to entirely separate the various services whether they be professional or non-professional, and the hospital will necessarily have to bear the same name whether it applies to the medical or irregular practitioner division. Indeed, there is no way in which the identity of the two portions of the hospital can be kept separate. *Under no circumstances can the approval of the American Medical Association be given to the practice in hospitals of any individuals, whether they have the degree of Doctor of Medicine or not, unless both educationally and morally they are qualified to intelligently and efficiently care for sick and injured people.* More serious still, however, is the legal status which will result from the arrangement you have made for irregular practitioners—a legal status which you can hardly afford to assume. The board of trustees which controls a hospital, and this refers with particular force to hospitals caring for pay patients, is legally responsible for any errors or malpractice on the part of any practitioner who is permitted to treat the sick in the hospital. *Therefore, that board will be liable for any disasters which may result through the ignorance or incompetence of the irregular practitioner.*

"If the arrangement you have made for irregular practitioners continues, I do not see how recognition can be given to your hospital, either as a place in which efficient care to its patients can be assured, or as a place where an adequate training of interns can be provided.

"The irregulars are fighting against the requirement of reasonably high educational standards throughout the country, but it seems that *they are at present focusing their action on the institutions in the fair state of California.* I believe you will agree with me that the greatest safety to your hospital from every point of view rests in your standing firm for the principles and educational standards which the American Medical Association is trying to uphold in the hospitals of this country."

American College of Surgeons to W. E. Musgrave:

"I want to thank you for your communication of July 6 with enclosures re conditions at the ——— hospital.

"I have notified them that in view of the action they have taken their standing, so far as the American College of Surgeons is concerned, is endangered. I have, however, asked for an official statement from the hospital authorities regarding their present relations to the irregulars, pending my final decision. I want to get something from them in writing. However, we have sufficient data on hand to cause us to eliminate them from our list of approved hospitals unless there is a very radical change in the near future in the present situation.

"I find that the ——— and the hospital at ——— are both playing with the irregulars, and for that reason, particularly, have been notified that we cannot give them our approval.

"——— county hospital will soon have their irregular unit ready. *This will disqualify them also,* so far as hospital standardization is concerned, inasmuch as this unit is under the corporate name of the hospital which *we approve as a whole and not in part.*

"If county hospitals, by virtue of their nature, are obliged to submit to public or popular whims, then I feel that the county hospital system is not a sound one for future hospital development.

"If the medical profession would absolutely refuse to use hospitals which are courting the irregulars

it would settle the matter in a very definite manner, for the hospitals cannot get along without the educated doctors and their clients."

American Hospital Association to —— Hospital:

"Your first vital mistake was made when funds were solicited from the public on the presumption that irregular practitioners would be given equal privileges with doctors of medicine. If this is true it would be far better to raise additional funds to repay those who contributed under these representations rather than attempt to run a hospital with the two under one roof.

"So far as this association is concerned we do not recognize a hospital whose staff admits any of the cults. We believe that a hospital is a place for the scientific care of the sick and that the trustees are *morally and legally responsible* for the application in the institution of all of the modern methods and practices generally recognized by the medical profession. We believe that the trustees have an absolute right, and are legally obligated, to choose the members of the staff and that in making such choice they should be bound by the highest standards that have been set in the country.

"I can conceive of no method whereby a decent hospital can permit osteopaths, or other cults, to practice under its corporate name while keeping faith with the public and maintaining high ideals and, because of this belief, we refuse to accept a hospital as a member of this association where such practitioners are admitted.

"It is realized that you have a practical problem to solve and that there exists considerable public sentiment in favor of the cults in your vicinity but we are convinced that only grief and disorganization can result from the sacrifice of fundamental principles and that your only salvation lies in making a determined stand for the right. *If the osteopaths want hospitals let them establish them and go to the public boldly for their funds rather than hide under the cloak of the profession of medicine whose ideals they would destroy.*

"I see no prospect of a compromise when such involves the sacrifice of the things we have so long fought for and I feel safe in saying that this association is not likely to lower its standards through the clamor of a very small minority that is endeavoring to obstruct the wheels of progress."

I might quote more at length and from additional sources, but surely enough has been said to clearly outline the issue between adequate education and morality on the one hand and the hosts of "sciosophy" on the other, at least insofar as hospitals are concerned. A similar problem is forcing itself to the front in the conduct of "clinics," the duties, responsibilities and ethics of nursing and a score or more contacts between agencies of health based upon intelligence and the machinations of the hosts of "sciosophy."

A STUDY OF SURGICAL DIAGNOSTIC ERRORS

The most accurate check yet devised to determine the errors of physicians in their clinical judgment as expressed in diagnoses is, to compare the clinical findings with the autopsy findings in a series of cases. This has been done repeatedly in various centers, but not as often as it should be.

Several months ago (January) we noted in these columns the interesting study made by Sison and Sison from the medical records of patients of the Philippine General Hospital, Manila. More recently, C. M. Reyes (Journal of the Philippine Islands Medical Association) has made a similar comparative study of the clinical and post-mortem records of the fatal surgical cases of the same hospital during the past twelve years. This study, says the author, is an inquiry "into the extent and gross causes of the discrepancies occurring between the clinical diagnosis on one hand, and the pathological findings on the other, in 1065 surgical and gynecological cases that passed through the free wards of the Philippine General Hospital and went to autopsy during the first twelve years of its existence."

Leaving out of consideration certain conditions, the analysis of the records shows 3708 diagnoses for 1065 patients. Errors of commission (as determined by autopsy) occurred 729 times (19.6%), of which 287 or 7.7% are recorded as excusable errors. Errors of omission were 1719 or 46.3%, of which 761 or 20.5% were classed as excusable after autopsy studies. Clinical diagnoses were correct 1260 times or in 33.9%, of all the 3708 diagnoses.

A hospital like the Philippine General Hospital, where the faculty of a medical school is ex officio the staff of the hospital; where the well known Bureau of Science and the city morgue are all located upon the same campus, and where each and every clinical diagnoses found in every patient is entered upon the clinical record; where the anatomic diagnosis is made equally complete and where autopsy is secured for well over 90% of patients, offers particularly favorable opportunities for studies of this character.

It is worth noting that Reyes' findings are—as they should be—a comparison between *diagnoses* independent of the number of patients. His 1065 patients had 3708 clinical diagnoses and he did not consider many others that were of little consequence or could not be checked up by autopsy.

The showing made by the study compares favorably with somewhat similar reports elsewhere. There is some consolation in the figures and much that should stimulate clinicians to devote more serious and thorough study to their patients; and there is a sharp warning for all of us who may tend to grow careless under conditions where carelessness is paid for with health or even life.

DON'T FORGET

The Lane Medical Lectures, so fully described in the September issue of CALIFORNIA AND WESTERN MEDICINE, page 1179, are to be held in Lane Hall, Monday to Friday, November 9 to 13, 1925.

Graduate instruction in medicine seems to be the order of the day, and it is difficult to conceive how more valuable or lasting benefit may be secured by any physician in any way interested in the problems of orthopedic surgery than by attending these lectures.

Tom Sawyer on Vaccination—"I ain't denying that a thing's a lesson if it's a thing that can happen twice just the same way. There's a lot of such things, and they educate a person, that's what Uncle Abner always said; but there's forty million lots of the other kind—the kind that don't happen the same way twice—and they ain't no real use, they ain't no more instructive than the smallpox. When you've got it, it ain't no good to find out you ought to have been vaccinated, and it ain't no good to get vaccinated afterward, because the smallpox don't come but once."—Tom Sawyer Abroad.

- *The* MONTH *with the* EDITOR -

Notes, reflections, extracts from correspondence, comment upon medical and health news in both the scientific and public press, briefs of sorts from here, there and everywhere.

We have been asked to accept a financially profitable *advertisement* from a new proposed *he*-goat farm.

We also recently declined the *advertisement* of a slaughterhouse offering to supply fresh "glands" at attractive rates.

"By-products" and "end-products" from slaughterhouses seem to be growing more numerous and expensive. Curiously enough, the price of meat does not decline.

"EATING too much is bound to shorten your life," observed the doctor.

"That's right," agreed the farmer. "Pigs would live a good deal longer if they didn't make hogs of themselves."

"IT IS not natural for your public to be objects of charity," writes Doctor Edwin Schisler (Journ. Mo. Med. Assn.). "One of the first laws of nature," continues this author, "is self-preservation and independence, which is taught in your schools, churches, and your actions of every-day life and handed down by your forefathers. Then why try to make dependents by forcing your different charities upon them?"

A June bug married an angleworm;
An accident cut her in two;
They charged the bug with bigamy,
Now what could the poor thing do?

I See by the Papers That—

—"The State Board of Osteopathic Examiners has been advised by the Attorney-General's office that city school boards could not, under the state law, employ osteopaths to examine children in the public schools, the law requiring licensed medical men for that work."

When King Nebuchadnezzar was restricted to a diet of grass his "hairs grew like eagles feathers and his nails like birds' claws"—at least, so says the Bible in the Book of Daniel.

Here's a hint to beauty specialists! Food faddists might also examine this "recent literature" with profit.

From Our Correspondents—

—Lemuel P. Adams, M. D. (Oakland) — The surgical "Conversaziones" are fine, and would like to see more of them in future numbers of our magazine.

—Alfred E. Banks, M. D. (San Diego)—Anent the surgical "Conversaziones," a sample of which is contained in the last issue of the Journal, permit me to state that the innovation is of the utmost interest and promise.

By all means continue this method of attack on the many vital questions which may be thus appropriately briefed.

—Roy Oliver Thompson, M. D. (Calexico, California)—The "Conversaziones" published in your latest Journal I think were a complete success. Give us some more of them, please.

—Julius R. Hamilton, M. D. (Hollywood, California)—I wish to thank you for the courtesy extended in the publication of the case report submitted by me, and your kindly comment in "Editor's Note" certainly lends encouragement to one to send in reports on any future cases that might be of sufficient interest for publication.

Please know your courtesy was appreciated.

—Doctor C. O. Sappington (Oakland)—I was very much interested in the article by Doctor Glaser on "The Doctor in Industrial Medicine," which appeared in the July issue. It was very well done, and I wrote a commendatory note to Dr. Glaser about it.

I wish to take this opportunity to congratulate you on the fine piece of work that you have done in bringing the Journal to where it is at the present time as the finest type of state or section medical journal in the United States.

"Happiness defies the laws of mathematics;
To multiply it you have to divide it."

Doctor James M. Patton (Journal A. M. A., August 22, p. 564) gives an illuminating discussion of "Oculists or Optometrists—Which?" that every doctor, particularly in California, ought to read *carefully*.

It seems that California is to become the perennial proving ground for curious things pertaining to health.

Most doctors are not much concerned with a controversy as to whether or not the present incidence of infantile paralysis in California constitutes an epidemic.

But we are all disturbed by official reports of some eight or ten cases a day.

More than five times as much poliomyelitis as for corresponding periods last year should at least be interpreted as a danger signal.

Mose—Does yuh really love me or does yuh jes' think yuh do?

Rose—Yas, indeedy, Honey. Ah really loves yuh; Ah ain't done no thinkin' yet!

Other County Medical Societies, and even the California Medical Association, would serve themselves and their people well by emulating the very praiseworthy work of the Los Angeles County Medical Association's Narcotic Committee.

Their recent report (Bulletin of the Los Angeles County Society) shows wise conduct in a difficult situation. The report is too long to republish here, but of its nine short paragraphs of advice to members we read:

"Think five times before prescribing for addicts."

"Think one hundred times before joining reform movements."

A GOOD WAY to gauge the truth of any man's argument is to ascertain the motive behind it. Many a cause which seems on a high moral plane is resting on a nicely concealed substructure of self-interest. — Ohio Health News.

"What do you make a week?" asked a judge of an Italian organ-grinder.

"Twenty dollars, sare."

"What, $20 for grinding an organ?"

"No, sare; not for da grind, but for da shut up and go away."

THE DISTURBING INTERVIEW published in the San Francisco Bulletin by Mr. Frederick L. Hoffman, statistician for the Prudential Life Insurance Company of New York, about the alleged excessive prevalence of cancer in San Francisco, and the Challenge written by this editor and published in the same paper the next day, is still bringing reactions in letters and messages from doc-

tors, and even more so, from the public of the whole community.

Of all the letters and messages, only one—and it was written by a doctor—"protested" about the rough handling of Mr. Hoffman, who, this doctor claims, ought to have the "active support of the medical profession in his work."

The recent serious illness of Doctor H. J. Hanzlik explains the absence of his excellent editorials from CALIFORNIA AND WESTERN MEDICINE during the last few months.

Doctor Hanzlik is professor of pharmacology of Stanford University and a member of the Council on Pharmacy and Chemistry of the A. M. A. It is a pleasure to the editor that his splendid monthly editorials on some phase of pharmacology and therapeutics have been missed by our readers. Doctor Hanzlik has now recovered, and we will again hear from him monthly.

From the Medical Press—

—Does roentgen ray modify the course of whooping cough? Faber and Struble of San Francisco (Journal A. M. A., September 12) say not. They supply some rather convincing evidence upon which their conclusions are based.

—Novasurol, ammonium chlorid, and controlled diet provide promising results in the treatment of patients suffering from nephritis and edema, according to Keith, Barrier, and Whelan (Journal A. M. A., September 12).

The gratifying results from the combination indicated was not secured by either of the three agents alone.

—Calmette and his co-workers keep hammering away on "B. C. G." their anti-tuberculosis vaccine (Am. Inst., Pasteur). Calmette is a veteran, daring and resourceful investigator, and let us hope that something practical comes out of his novel and extensive experimentation with the human-like apes in Africa.

The faster you travel the quicker you will reach the end of the road.
Old age and death are your last stations. Why hurry so?

MR. —— OF LOS ANGELES was injured in a motor accident. He was examined by a "licensed doctor," whose report of his findings reads:

"Had an X-ray taken at once for which reads Fourth Cervical to Sixth Cervical left roatary Scolisis (causing the neck to be pulled to the left side), causing disponea, preception dull and nervousness. Second: Seventh Dorsal to Ninth Dorsal right Scolisis (causing torpid condition of liver and kidneys, and auto-intoxication absorbing toxine). A contraction of the Lumbosacrael muscles, drawing right hip posterior, creating severe impingement of sciatic nerve. Also left knee injured by jar and causing severe pain of same. Patients sufers intestinal statis, absorption of toxines, and in general a fit subject of rest for at least two months after he is put shape at this office."

The physician to whom the patient eventually applied for service thought the above gem would be interesting news. It is. It is more than that. It's a whole arbeit that tells a lot.

"Exhausted Nutritives"—Under this heading the Medical Journal and Record writes editorially: "We, or at least our children, are urged these days to eat various things which we do not want, and might, therefore, on general principles, seem not to need. Bowing to authority, many of us have followed humbly the leadings of the 'nutrition workers' and have taken spinach and carrots and their ilk as a matter of conscience. We make no complaint against this diet (even if we do not like it), provided we really take in the ingredients which are supposed to be contained in the prescribed foods. Now cometh the agricultural scientist and deposeth that spinach is, in many a garden patch, suffering from chlorosis. If the spinach suffers from chlorosis, will not the human who depends on spinach for his daily supply of iron also suffer from chlorosis?

Medical Economics and Public Health

THIS IS ENCOURAGING

Commonwealth of Massachusetts
Department of Public Health
Preventive Medicine From Your Family Physician

"There are at least three common diseases that can be prevented. Any case of these diseases in your family means that available methods have not been used.

"(1) Smallpox may be prevented through vaccination. Recently smallpox has been widely spread over the country, and in some places it has been of the malignant type.

"(2) Typhoid fever may be prevented through the periodic injection of typhoid vaccine. 'Vacation' typhoid is mounting with the increased crowding of the country.

"(3) All your family can be protected against diphtheria. Your private physician will explain how.

"Diseases of middle life, due to 'wear and tear,' such as Bright's disease, arteriosclerosis, cancer, and diabetes are increasing. These diseases can be combated by corrected habits and early recognition. Periodic health examinations at all ages may save you from these diseases.

"Talk these matters over with your physician."

The Massachusetts Public Health Department "believing that the *private physician* is the ultimate unit in *preventive medicine* as in curative medicine," has prepared the above postcard for wide distribution. Physicians, hospitals, and all other health workers are invited to help distribute the cards.

This is one example of the many that are now being published, which seems to indicate that the practice of personal health by *public* health departments is on the decline. It is true that some boards of health still continue the operation of "health centers" and other contrivances for the private practice of medicine under the guise of public health, but they apparently are less numerous than they were a few years ago.

Some of the best public health departments have never entered the field of personal practice. Others from time to time announce their withdrawal from the field, and still others, like the Massachusetts Public Health Department, are now urging people to *go back to personal health doctors for personal health services, both preventive and curative.*

The Wayne County (Michigan) Medical Society is actively engaged in an effort to induce all of its members to have a physical examination. Preliminary reports indicate probable success.

A DOCTOR DOES NOT SECURE "BUSINESS" in Industrial Medicine by destructive criticism of the law and the methods of its enforcement.

Two of the three fundamental essentials to secure and hold "business" of this character are a complete knowledge of the provisions of the law as interpreted by the Industrial Accident Commission and a constant, prompt carrying out, in every instance of these requirements. The third essential is not included in this discussion.

Mr. W. H. Pillsbury, attorney for the Commission, authoritatively discusses the law in all that it signifies and in its many and far-reaching applications in "California Safety News" of December, 1924, and March and June, 1925. If Mr. Pillsbury would complete the discussion by a chapter thoroughly outlining doctors' and other medical agencies' responsibilities in the carrying out of this law as interpreted by rulings and actions of the Commission, the result would be wholesome.

Health Officers Recently Appointed (State Board of Health Weekly Bulletins)—*Mr.* J. J. Saunders has been appointed health officer of Covina. It should be noted that East Covina is under the supervision of the Los Angeles County Health Department, but that the city of Covina is not included under county supervision.

Mr. C. E. Wood has been appointed health officer of Oakdale, succeeding Mr. R. L. Acker, deceased.

Neither of the above appointees are licensed to practice medicine and surgery in the state of California.

Dr. Beverly Young has been appointed health officer of the city of Maricopa. He succeeds Dr. D. W. Sooy. Both are licensed to practice medicine and surgery in the state of California, and Doctor Sooy is a member of the California Medical Association.

The city of Brea in Orange County has turned over the administration of its public health affairs to Dr. V. G. Presson, health officer of Orange County. Doctor Presson is licensed (June, 1925) to practice medicine and surgery in California, but is not a member of the California Medical Association. Dr. W. E. Jackson was formerly city health officer of Brea.

Department Stores Add "Health Sections."—Several clippings of advertisements of certain department stores, calling particular attention to their new "Health Section," have been sent to us both by doctors and patients, inviting comment. A San Francisco department store urges its patrons to visit this "Health Section," where a . . . operator will *"diagnose the condition of your health."* This "operator" uses, according to the advertisement, a *"new and highly scientific device"* which, "through a series of vibrations, stimulates the activity of the cells and controls vicima, by which health is maintained." Treatments given by this expert are said to have produced "astounding results," etc., etc.

The only comments we care to make upon such bosh is to call attention to the fact that it constitutes a violation of the Medical Practice Act, both in its offers and claims.

"During June of this year there was no smallpox in Cuba. Covering the same period, 356 cases were reported in Ohio, according to Ohio Health News. Cuba is well vaccinated and enforces vaccination; Ohio does not enforce it."

What about California?

"Fifteen insurance companies are now issuing forms of policies on non-medical plan; twenty-two companies are considering and rather favorably inclined; twenty-five are not expected to adopt the practice, and most of these are unfavorable; seventeen are not issuing policies upon the non-medical plan, but are more or less noncommittal as to its advisability."

For a more extended discussion of this interesting development, see editorial, Journal Iowa Medical Society, August.

"Concerning Insurance Examinations"—"Dire consequences are foreseen for insurance companies who abandon the fundamental requirement of a medical examination as a requisite for life insurance.

"The trend is toward this policy. Several companies have already made special classes of policies available to applicants without medical examinations. The theory upon which such procedure is based is that the American actuarial tables are of sufficient experience-length as to warrant such a move. . . .

"The problem involved in the scheme to abandon medical examinations as a requisite to insurance, is not alone the prospects of a decline in the number of good risks and increase in the number of bad risks, but also the prospects for increase of 'state medicine.'

"Once the bars are down and insurance companies are inundated with a host of poor risks, with subsequent losses through claim-payments, then the next step would be to correct an already bad condition by endeavoring to administer to the health of bad risks taken, through elaborate nursing, and medical centers.

"Even now, it is understood, some insurance companies are seriously considering nursing and medical services to the policy-holders as a means of reducing mortality rates among their clientele."—Ohio State Medical Journal.

"THE NATION IS OBSESSED," the Cincinnati Enquirer says, "with laws and bureaus which are designed to emasculate the priceless thing that heretofore has been known as individual liberty. There has been and continues to be a trend toward governmental overlordship, a trend fomented and encouraged by the ribald red mockery of government which functions from Moscow, and whose propaganda is prattled and preached from every piffling Punchinello of sinister socialism and communist conflagration in this country. This reaction is seen in the multiplication of federal bureaus and proposed amendments to the Federal Constitution, which, with their resultant clouds of agents, sappers, spies, hangers-on, and official meddlers in the citizen's private life and business."

"Several months ago one of the largest and best known life insurance companies of the country made the surprising announcement that thereafter on business examined within two years additional insurance up to $10,000 would be issued without medical examination. Another company had already set aside one month a year, during which this privilege was available, and others conceded the writing of twenty-year endowment policies up to $2000 without medical examination, all showing a tendency toward unexamined business."

Medical and Related Book Service—For several issues past CALIFORNIA AND WESTERN MEDICINE has been carrying the card of F. Gertrude Tallman, who has a medical and related books service in the new Medico-Dental building, 480 Post street, San Francisco.

The surface has hardly been scratched in promoting the sale of worthwhile medical and scientific books in California. We are glad to accept advertisements and promote the interests of concerns like that of Miss Tallman that are being conducted upon a high ethical plane and are serving well a need.

It Affords Us Great Pleasure to admit to our advertising pages, beginning with this issue, the *Scripps Metabolic Clinic and Scripps Memorial Hospital,* La Jolla, California. This splendid memorial is one of the fine, new, modern health-service institutions, donated in the right spirit and being operated in the right spirit, to the credit of scientific medicine and the welfare of the public.

Like so many other of the newer institutions, and with the consent of the benefactor, the articles of incorporation were so drafted as to insure in perpetuity that only adequately educated physicians may practice in that institution. In fact, the intelligence and farsightedness employed up to the present in the planning, construction and operation of this hospital deserves imitation.

An Opportunity for Rest and Recuperation is offered by Miss Alice E. Firth, R. N., at her home, Glen Lodge, Whipple Road, in the foothills above Redwood City. Miss Firth is well and favorably known to many of our members in San Francisco and other Bay cities through her work in the past as supervising nurse in one of our large hospitals and through private duty nursing. Her announcement will be found on the back cover of this and other issues of CALIFORNIA AND WESTERN MEDICINE.

Tuberculin—The chemical composition of the active principle and the nature of the tuberculin reaction are discussed by Esmond R. Long and Florence B. Seibert, Chicago (Journal A. M. A.). The active principle of tuberculin is non-dialyzable; is not absorbed by animal charcoal; is destroyed by trypsin; is maximally but incompletely precipitated by acetic acid at p_H 4.0, and is completely precipitated by saturation with ammonium sulphate. The product precipitated by ammonium sulphate is of protein nature, and can be separated into three protein fractions: (1) A water-soluble heat coagulable protein; (2) a non-coagulable, alkali soluble protein, and (3) a non-coagulable, water-soluble protein. Of these, the first and third appear to be the most potent. The nature of the highly specific toxic action of this substance on the tissues of a tuberculous animal is not known. Preliminary experiments indicate that the tissues of the sensitized (tuberculous) animal do not act on tuberculin in such manner as to render it toxic for normal animals, nor do they bind the active principle in appreciable quantity, so as to render a tuberculin preparation less toxic for another tuberculous animal.

California Medical Association

EDWARD N. EWER, M. D., Oakland.....President
W. T. McARTHUR, M. D.....President-Elect
EMMA W. POPE, M. D., San Francisco.....
.....Secretary and Associate Editor for California

ALAMEDA COUNTY

Alameda County Medical Association (reported by Pauline S. Nusbaumer, secretary)—At the first monthly meeting after vacation, held August 17, the following program, as arranged by T. C. McCleave, was presented:

The Epidemiology and Public Health Aspects of Poliomyelitis—Karl Meyer, University of California (by invitation).

The Diagnosis and Treatment of Poliomyelitis—H. H. Hitchcock, Oakland. Discussion of these papers was opened by Harry Foster and Philip Potter, Oakland; W. P. Shepherd, Berkeley.

The Certified Milk Commission and Its Work (illustrated by lantern slides)—T. C. McCleave, Oakland.

The papers on poliomyelitis were presented by special request of the health officers of Oakland and Berkeley, in view of the prevalence of the disease at that time.

Dr. K. F. Meyer, in discussing the public health aspect of acute anterior poliomyelitis, recalled that the infectious nature of poliomyelitis became evident from the clinical and epidemiological observations of Wickman (1905-06) in Sweden, and the transmission experiments of Landsteiner and Popper in Austria, and Flexner and Lewis in this country. On account of the parallelisms of the human and experimental disease both in their clinical and pathological aspects, it was pointed out that inferences drawn from experiments with monkeys may be accepted with a certain degree of safety as valuable to the solution of problems in connection with human cases.

Inoculations of material obtained at autopsy from a human case demonstrated the virus in the brain and cord, basal ganglia, cervical and lumbar enlargements, the sympathetic ganglia, nasal and pharyngeal mucosa, tonsils, and lymph nodes. The virus is not found in the cerebrospinal fluid, blood or viscera. Nasal washings of clinical cases contain the virus during the acute stage of poliomyelitis. It is very much diminished after the first week.

The natural mode of infection is probably by the nasal route. It appears that the virus is propagated in the central nervous tissue of the host, is transferred by chance either directly or indirectly from nasal mucosa of the susceptible to the new host. It is probable that the virus goes directly through the nasal mucosa to the olfactory lobes by means of the perineural lymph spaces, and not first into the circulation and then into the meninges.

A favorite explanation of the epidemiology of the disease is to regard it as a very communicable disease like measles, and much more widespread in the community than indicated by the paralytic cases. Most cases are mild, escape notice and leave protection. In accordance with this theory, only the occasional severe case with paralysis comes to clinical diagnosis. In accordance with this view, one is dealing with a very common infection, always present in the community, but which in recent years has gained an increased virulence.

The virus having been transferred to the nasal mucosa of the second human being, may lodge there, remain active, or may be destroyed. That the latter may happen is shown by the experiments of Flexner and Amoss on the neutralization of the virus by nasal washings. The definite seasonal distribution of poliomyelitis suggests that the recovered case or carrier act as the inter-epidemic reservoir of the virus. All things considered, it seems that the virus has greater chance of surviving in the nasal secretions of the carrier than the recovered case.

Field observations indicate that only slight contact between the carrier of the virus (case, healthy carrier, or person in the incubation period) and the susceptible person suffices for the transfer of the virus. In recovered cases the virus probably disappears, except in rare instances, within ten days to two weeks after the acute attack. The stage of communicability then is from one to two weeks after the onset. This presents difficulties from the standpoint of prevention. The use of convalescent human serum as a prophylactic measure is unpractical. Vaccination with altered or changed virus has been tried experimentally, without success. The only method of prevention is isolation until the age of relative non-susceptibility arrives. The patient and intimate contacts are quarantined for three weeks. A search must be made for all persons, especially children, who have been associated with the patient for the previous week. Since the children may be in the incubation period, they are voluntarily quarantined for two weeks.

H. H. Hitchcock, discussing the diagnosis and treatment of acute anterior poliomyelitis, pointed out that this disease is a generalized infection, not confined to children, but seen in all ages. The type of child most often taken in the Long Island epidemic in 1916 was the round-faced child with the central incisors spaced, adults of unusual types as acromegalics, hypopituitary, etc., were common.

There are four types seen—the "abortive," the "dromedary," the "straggling," and the "sudden onset group."

The early symptoms of the disease are the same as seen in any acute infectious disease of childhood. The eyes, however, often present a puffiness of the circumorbital tissue and a glazed porcelain quality in the sclera and cornea.

The "spine sign" (pain and discomfort from flexing the neck or spine) is of importance.

The blood shows 15,000 to 25,000 white blood cells. The spinal fluid is increased in volume, the cell count ranges from 10 to 2500 per cmm., but is rarely opalescent or turbid.

The two most important things in the treatment of the acute phase is the avoidance of meddlesome therapeutics and the prevention of deformities due to muscle-stretching or muscle contractions.

Children should not be permitted to walk until their abdominal and other muscles are strong enough to function normally or are properly protected from stretching and fatigue. Some children are best treated by reclining in bed for a full year. No electricity or massage should be given while there is muscle soreness.

T. C. McCleave, speaking on the work of the Certified Milk Commission, discussed the history of certified milk movement, the organization of a commission by a county medical society, the methods and standards for the production of certified milk, and the medical veterinarian, sanitary, bacteriological and chemical control of the operation of a certified dairy. He pointed out the relative value of certified milk and such other grades of market milk, as guaranteed, pasteurized, etc. The paper was illustrated by lantern slides, depicting unsanitary dairy conditions such as formerly prevailed very generally—and still do to some extent—and contrasted these with slides, showing the methods of production of milk in modern sanitary dairies, with particular reference to certified dairies.

The program was a most instructive one, and brought out a big attendance, many remaining and continuing the discussion in the refreshment hall until midnight.

FRESNO COUNTY

Fresno County Medical Society (reported by John Montgomery, M. D., secretary)—The new out-patient clinic of the Fresno County General Hospital is about completed and will be in use within the month. The Board of Governors of the medical society have expressed themselves in favor of handling all free clinic work in this clinic, and with this in view have sent the following resolution to the Community Chest and to the small clinics operating in Fresno, partly under the support of Community Chest funds:

Whereas, There is no doubt that a certain amount of free clinical work is needed in Fresno; and

Whereas, The Fresno County General Hospital will soon be in a position to handle this work in a completely equipped building, designed for this purpose; and

Whereas, This Clinic will have connected with it, the following:

1. A department of social service, to investigate each applicant, consisting of a social worker and an assistant.

2. A pathologist and complete laboratory organization.
3. Radiographer.
4. Pharmacist.

And in addition there will be available the supervision of the resident surgeon, and the services of an intern, and complete nursing service.

And whereas there will also be the advantage of direct connection with the hospital for patients needing to be referred for hospital care, it is the sense and opinion of the Board of Governors of the Fresno County Medical Society that the clinics conducted by the Fresno County General Hospital will adequately cover the entire field of free clinic work.

It is further the conviction of the Fresno County Medical Society, as represented by the board of governors, that no organization supported by voluntary contributions in Fresno, or by the Community Chest, can afford to put in the necessary expensive equipment, such as x-ray and laboratory equipment and organization, and without these scientific medicine cannot be practiced.

Further, it is our conviction that a clinic which undertakes to operate without these departments is doing an injustice to patients by keeping them away from a place where adequate treatment and facilities are provided. And that the work done in an improperly equipped clinic has a tendency to lower the standards of medicine in this community.

It is further our opinion that the numerous small clinics, which are improperly equipped, make no effort to investigate thoroughly the financial condition of patients, owing to their inability to employ trained social workers for this purpose. And that, therefore, these clinics are imposed upon and people often pauperized.

It is also our opinion that the most efficient work comes through centralization. Therefore, the more this work is divided, the less efficient it will be, and the more difficult to control.

It is also our belief that such smaller clinics are often dominated by "laymen" who cannot grasp the medical point of view. And that the money, which is trust money, being donated by the people to support such clinics, will accomplish more good if spent along other lines, leaving the medical care of the sick and poor to the county, where the law places it.

The secretary of the society is hereby instructed to deliver a copy of this resolution to the directors of the Community Chest. And ask the publicity committee of the society to give this resolution such publicity as seems best.

MARIN COUNTY

Marin County Medical Society (reported by J. H. Kuser, secretary)—A meeting of the Marin County Medical Society on August 20 was held at W. F. Jones' office in San Rafael. The following members were present: H. O. Hund, W. F. Jones, L. L. Stanley, C. De Lancey, Charles B. Marston, J. H. Kuser, and A. H. Mays. This being a business meeting, no papers were read.

On motion of L. L. Stanley, Dr. O. A. Sharpe of San Francisco was invited to read a paper before the society at its next meeting on September 24, the meeting to be held at the San Rafael Club.

The application of Frank Cannon of Point Reyes station was presented by transfer from Idaho, and, on motion duly made and seconded, Doctor Cannon was elected a member of the society. Several communications were read and filed.

SACRAMENTO COUNTY

Sacramento Society for Medical Improvement (reported by Bert S. Thomas, secretary)—The September meeting will be too late to report in this issue. In addition to the applications from Moser, Reynolds and Schluter, as previously reported, we have three more applications on our files. These come from Charles Israel Titus, now settled in Sacramento, coming to us after five years' practice at Minot, South Dakota, and fourteen years' practice at Great Falls, Montana. He was president of his local society, the Cascade Medical Society; Norris Jones, present resident at the Sutter Hospital; Angus McKinnon, holding a hospital residency at Mater Misericordiae.

Albert K. Dunlap surprised his many friends by the announcement of his marriage to Ruth Yarborough.

Bert T. Rulison tells of a very enjoyable trip through the East. He spent most of his time at the Mayo Clinic.

The beautiful statue, Maternity, presented by June Harris to W. A. Beattie, now occupies a prominent place at the entrance of Sutter Hospital. The statue has been re-presented to Sutter Hospital as its permanent property.

William Ellery Briggs has returned from his world tour. He took a full year in his travels, a goodly portion of the time being spent in the Orient.

George N. Drysdale, chief of staff at Mater Misericordiae Hospital, has spent one month in the East in the interest of his hospital. He is studying methods of hospital administration. His daughter, Miss Dorothy, chief surgical nurse of Mater Misericordiae Hospital, accompanied him. She is also studying operating-room routine.

SAN DIEGO COUNTY

San Diego County Medical Society (reported by Dr. Robert Pollock)—On August 25 the voters of San Diego authorized, through the polls, a substantial bond issue for further development and extension of the service of the San Diego County General Hospital. The intelligent expenditure of this issue will greatly facilitate the medical service for the poor.

The County Medical Society resumed its scientific work, following a dinner at the San Diego Hotel on Tuesday, September 8. The program consisted of three numbers: (1) An excellent case report of unusual interest compiled by A. E. Banks, and in his absence read by Frank Carter, describing a case of osteo-arthritis of Marie coming to autopsy, which showed, as the sole pathology, carcinoma of lung and cerebrum. This paper was discussed at some length by Drs. Redelings and Carter. (2) Ben F. Eager presented a patient on whom he had recently made a division of the posterior root of the right Gasserian ganglion for the relief of painful trifacial neuralgia of ten years' standing. This case, from the standpoint of prompt relief, freedom from disfigurement and quick release from hospital and return to work, left little to be desired in the handling of this stubborn condition. (3) James F. Churchill gave an extremely interesting—because clear and informal—exposition of electro-cardiography. Churchill made very clear the many ways in which the electro-cardiogram is a distinct aid to the clinical study of heart conditions, taking pains to show just what the instrument can do and what are its limitations. He supplemented this talk with a presentation on the screen of graphic records of many of the abnormalities which the instrument can portray. This paper met with an enthusiastic reception, and was discussed at some length by Owens and White of the Naval Hospital. At the close of the discussion on his paper, Churchill took occasion to thank the commandant and officers of the Naval Hospital for many courtesies received at their hands, and to express in high terms of commendation the excellent scientific work, both clinical and research, which is being carried on by the splendid staff of this hospital.

The program committee announced the October meetings to be featured by a trip to El Centro, where the sister societies of San Diego and Imperial Counties will discuss jointly a program based on casualty surgery.

SAN FRANCISCO COUNTY

St. Lukes Hospital submits an interesting report for the month of August. They had a daily average of 150.9 patients, with 4527 patient days. Of these, 106 days were free and 308 days were utilized by patients who could pay only a part of the cost of their care. Thirty-six thousand seven hundred and thirty-four meals were served at a cost, exclusive of prorated overhead and general expense, of 21 cents a meal. Eighty patients were refused service in the free clinics, and were instructed to consult their private physicians. One thousand four hundred and fifty-one persons requested reduced rates.

This hospital issues a remarkably concise and well-prepared monthly report of its doings.

St. Joseph's Hospital Staff Considers Construction Problems—On September 2 R. G. Brodrick of Oakland

spoke before St. Joseph's Hospital staff of San Francisco on "Latest in Hospital Construction," A. S. Musante presiding. The following is an abstract of the address:

"The problem of constructing a modern hospital presupposes a consideration of a proper site and here, also, the old buildings. Elastic plans to meet the growing use of hospitals and the control of an entire city block are best. The ideal should be aimed at. Economy is often questionable, especially if based on cost per bed or square feet. Cubic cost is better. Two thousand five hundred cubic feet is the legal requirement, but 7500 cubic feet is required; figuring the school of nursing, 10,000 cubic feet is needed per patient. Maintenance costs must be considered. The culinary department can cost one-third or one-half of it, and labor now makes up 50 per cent. Much depends upon types of patients—pay, part-pay, and free. Latter should be limited, so those straining to pay low rates will be able.

Tendency in rooms is to make them attractive and free from somber aspects and odors. Color is needed for the interior. All conveniences must be considered. The size is smaller than before, 11 x 11 being used. The bed is placed out of the draughts, between the door and window. Patients' call system is by flash, not bell. The double-hung sash is still the best window, the top transom being omitted. Telephone and radio are now used. Facilities for hospital and visiting nurses are needed. Great numbers of baths and suites are not profitable, about one bath to fifteen patients being the average. Wards are smaller than ever, eight beds being the maximum. Utilities are placed in middle.

The surgery is placed where there is no passage to anything else, to eliminate visitors and be able to close it off. Compact rooms, with much of the equipment built in and about 16 x 18 x 20, are used. Viewing platforms, reached from hall, are used. The windows are getting smaller and artificial light is used more, as it is steady. Spotlights are not favored for general lighting, but are used to illuminate deep fields. Nitrous oxide is piped into the surgery from large tanks. Compressed air, alternating and direct currents and x-ray connections are provided. Floor drain and other plumbing are not used, but the anteroom can house them. Distilled water is being replaced by sterile water. Scrub-up room should be next to surgery. Sterilizing outfits are placed between operating rooms, and pressure types are best. All the piping can be built in stalks, easily accessible. Light green tiling is better. Surgical laboratories are placed near surgery, but general ones should be nearer internists' floors and out-patient department. The x-ray room should be convenient to operating room, on account of its growing importance to urological and other procedures.

Metabolic, electro-cardiographic, post mortem, and animal experimentation rooms should be convenient to laboratory. Handle dead so as not to be seen by patients. In admitting patients, ambulance patients must be kept separated from those afoot. Provide for observation and isolation of cases.

The culinary department must provide proper place, construction, and equipment for the kitchen. Trays are distributed by elevators. The dish-washing room should be deadened to limit the noise. Door-closers, ball-bearing butts, hardware for doors, laundry, signal systems, and physiotherapy need study, the latter being desired by the public, but should be in charge of a technician and be supported by the staff. An emergency service is needed in large cities for traffic and other wounds.

On October 14 Dr. Harry Spiro will speak on "Modern Diagnosis and Treatment of Heart Disease," and Dr. Earnst Gehrels on "Gastric Surgery."

SISKIYOU COUNTY

Siskiyou County Medical Society (reported by Cordes W. Ankele, secretary)—The members of the Siskiyou County Medical Society met, with their wives, at luncheon on August 30 at Crag View, Castella. Following the luncheon a business meeting was held out under the trees, while the wives were engaged at cards. There was a general discussion as to the effect of the newly adopted fee schedule, followed by a discussion on the treatment of chronic urinary infections.

H. A. Morse of Hilt was elected to membership. The following members were present: R. H. Heaney, Charles Pius, Szabo Kalman, W. E. Tebbe, C. W. Nutting, and C. W. Ankele.

CHANGES IN MEMBERSHIP

New Members—Lawrence J. Bernard, George Eric Chapman, J. Paul de River, Thomas E. Gibson, Robert M. Laddon, A. A. Maximova-Kulaev, Edmund J. Morrissey, Harry J. Pruett, Sergius S. Rakitin, Guy Schoonmaker, San Francisco; Frank M. Cannon, Point Reyes Station; C. Dana Carter, Clarence D. Dickey Jr., Roscoe A. Ford, Alessandro Jardini, Roscoe M. Nicholson, A. W. Williams, Los Angeles; Luella S. Cleveland, San Jose; Glenn G. English, Hollywood; Bernard H. Gilbert, Montague; Charles C. Hall, Oda T. Leftwich, Rufus I. Newell, Oakland; Burton A. Myers, Hammonton; William G. Tucker, Dunsmuir.

Resigned—John E. Nast, San Francisco.

Transferred—Adolph Kutzmann, from San Francisco County to Los Angeles County; Charles E. Mordoff, from Fresno County to Alameda County; Harper Peddicord, from Mendocino County to San Mateo County.

Deaths—Skeel, Roland Edward. Died at Los Angeles September 4, 1925, age 56. Graduate of the University of Michigan Medical School, Ann Arbor, 1890. Licensed in California in 1919. Doctor Skeel was a member of the Los Angeles County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

EXTENSION LECTURE SERVICE

In the September issue of CALIFORNIA AND WESTERN MEDICINE was extended an invitation to the members of the California Medical Association to join the Extension Service. The revised list, as here published, will be issued as a reprint on November 1 for the use of county secretaries. Further names of members who desire to join this service, together with the titles they are prepared to present, will be added to this reprint if furnished the state office before October 20.

Harry E. Alderson, M. D., 320 Medico-Dental Building, 490 Post, Street, San Francisco.
1. A Skin and Syphilis Clinic will be Held of Locally Selected Cases (five or six).
2. Newer Methods of Therapy in Dermatology.
3. Therapy of Lues.

Walter C. Alvarez, M. D., 803 Liebes Building, 177 Post Street, San Francisco.
1. The Taking of a Gastro-Intestinal History and What It Means When You Get It.
2. Practical Points in the Diagnosis of Gastro-Intestinal Disease. (Lantern slides.)
3. New Light on the Cause and Significance of High Blood Pressure. (Lantern slides.)
4. The Present Status of Various Researches of Interest to the Physician.

Hans Barkan, M. D., 921 Medico-Dental Building, 490 Post Street, San Francisco.
1. Headaches Due to Ocular Causes.
2. Industrial Aspects of Eye Injuries.
3. Modern Methods of Cataract Operations.

Edwin I. Bartlett, M. D., 1020 Medico-Dental Building, 490 Post Street, San Francisco.
1. The Use of the Exploratory Incision in the Diagnosis of Malignant Disease.
2. When and How to Operate on the Breast.
3. Simplified Classification of Breast Conditions, and "Short-Cuts" to Diagnosis.
4. Essential Points in Neck Dissections and Methods of Accomplishment.

W. W. Boardman, M. D., 612 Union Square Building, 350 Post Street, San Francisco.
1. Treatment of Cholecystitis.
2. Cholecystography—Its Value as a Diagnostic Procedure in Infectious Gall-Bladder Disease.
3. Some of the Newer Methods of Studying Liver and Gall-Bladder Disease — Vandenberg's Test—Icterus Index—Phenoltetrachlorphthalein.

Philip King Brown, M. D., 401 Medical Building, 909 Hyde Street, San Francisco.
1. The Medical and Surgical Treatment of Peptic Ulcer.
2. The Medical and Surgical Treatment of Angina. (With Walter B. Coffey, M. D., San Francisco.)
3. Leukemia and Its Treatment, With Special Reference to X-Ray.
4. Pneumothorax, Phrenocotomy and Thoracoplasty in the Treatment of Pulmonary Tuberculosis. (With Leo Eloesser, M. D., San Francisco.)
5. Chronic Gall-Bladders.
6. Management of Acute and Chronic Heart Disease.

Joseph Catton, M. D., 609 Howard Building, 209 Post Street, San Francisco.
1. The Doctor Looks at Crime.
2. Mental Problems in Every-day Practice.
3. Your Patient's Vegetative Nervous System Is Just as Important as His Central Nervous System.
4. What the General Practitioner Should Know of Encephalitis.

E. W. Cleary, M. D., 803 Liebes Building, 177 Post Street, San Francisco.
1. Fractures of the Spine. (Lantern slides.)
2. Fractures of the Long Bones. (Lantern slides.)

Ernest S. Du Bray, M. D., Flood Building, 870 Market Street, San Francisco.
1. The Management of Diabetes Mellitus, With Special Reference to the Method of Planning Quantitative Diets and the Use of Insulin.
2. The Early Diagnosis of Diabetes Mellitus and Its Differentiation From Certain Benign Chronic Glycosurias probably of Non-Pancreatic Origin.
3. The Criteria for Prognosis in Arterial Hypertension.
4. A Consideration of the Degenerative Diseases and Their Prevention Through Preclinical Medicine.

L. A. Emge, M. D., 506 Union Square Building, 350 Post Street, San Francisco.
1. Sterility.
2. The Transsufflation of Uterine Tubes.
3. What Can the Clinician Learn From Cancer Research?
4. The Lacerated Cervix.

Ernest H. Falconer, M. D., 316 Fitzhugh Building, 380 Post Street, San Francisco.
1. The Diagnosis of Pernicious Anemia. (Lantern slides.)
2. The Treatment of Severe Anemias. (Lantern slides.)
3. The Classification and Diagnosis of the Hemorrhagic Diseases. (Lantern slides.)
4. The Spleen and Its Relationship to Diseases of the Blood-Forming Organs. (Lantern slides.)

Arthur C. Gibson, M. D., 416 Physicians Building, 516 Sutter Street, San Francisco.
1. Pan-Sinusitis, With Suggestions for Rational Therapy.
2. Chronic Catarrhal Otitis Media, With Discussion of Causes, Treatment, and Results.
3. Causes of Chronic Otitis Media, With Discussion of Treatment and Results.
4. The Mastoid—Its Complication, Diagnosis, Treatment, With Results.
5. Combined Intranasal and External Tear Sac Operations With Results (Totimosher Method).

Edgar L. Gilcreest, M. D., 315 Fitzhugh Building, 380 Post Post Street, San Francisco.
1. Personal Reminiscences of Sir William Osler, Physician and Philanthropist. (Lantern slides.)
2. A Consideration of Rupture of Muscles and Tendons. (Lantern slides.)
3. Fractures of the Elbow Joint and the Lower End of the Humerus. (Lantern slides.)
4. Fractures of the Ankle Joint and the Lower End of the Tibia. (Lantern slides.)
5. Fractures of the Wrist Joint and the Lower End of the Radius. (Lantern slides.)

A. Gottlieb, M. D., 605 Consolidated Realty Building, 607 South Hill Street, Los Angeles.
1. Club-Feet.
2. Poliomyelitic Deformities—Prevention and Treatment.
3. The Painful Foot. (Lantern slides.)
4. Osteochondritidis: Legg-Perthes, Koehler's Disease, etc. (Lantern slides.)

R. W. Harvey, M. D., 711 Fitzhugh Building, 380 Post Street, San Francisco.
1. The Personality of the Patient.
2. The Vegetative Nervous System.
3. Vocational Education in the Rehabilitation of Nervous Cases.

Samuel H. Hurwitz, M. D., 1214 Medico-Dental Building, 490 Post Street, San Francisco.
1. Diet and Blood Pressure.
2. Infection in Asthma—Results of Treatment.
3. The Treatment of Bright's Disease.

W. H. Kellogg, M. D., State Hygienic Laboratory, Berkeley.
1. The Problem of Diphtheria.
2. Present Status of the Schick Test and Immunization Against Diphtheria.
3. The Practicing Physician and Preventive Medicine.
4. The Old and the New Public Health.
5. Immunologic Reactions of Especial Interest to the Practicing Physician.
6. The Status of Laboratories in the Practice of Medicine.

William J. Kerr, M. D., University of California Hospital, San Francisco.
1. Treatment of Heart Disease.
2. Diagnosis and Medical Treatment of Goiter.
3. The Cardiac Irregularities, Their Recognition, Treatment, and Prognosis. (Lantern slides.)
4. Liver Function Tests. (Lantern slides.)

Alson R. Kilgore, M. D., 724 Medico-Dental Building, 490 Post Street, San Francisco.
1. Treatment of Mouth and Skin Cancer by Surgery or Radium.
2. The Pre-Cancerous Conditions of the Breast.
3. Clinical and X-Ray Diagnosis of Bone Tumors.
4. The Diagnosis of Early Breast Lumps by Gross Pathology at the Operating Table.

Eugene S. Kilgore, M. D., 724 Medico-Dental Building, 490 Post Street, San Francisco.
1. Precordial Pain—Clinical Types and Significance.
2. The Assessment of Circulatory Efficiency.
3. Cardiac Irregularities—Their Non-Instrumental Recognition and Significance.

Fred H. Kruse, M. D., 916 Fitzhugh Building, 380 Post Street, San Francisco.
1. The Irritable Colon.
2. The Redundant Colon.
3. Peptic Ulcer, Etiology and Diagnosis.
4. The Medical Treatment of Peptic Ulcer.
5. Clinical Studies in Thyroid Disease.

Hans Lisser, M.D., 208 Fitzhugh Building, 380 Post Street, San Francisco.
1. Types of Ductless Gland Disease. (Lantern slides.)
2. Present Status of Organotherapy. (Lantern slides.)
3. Roentgenology as an Aid in the Diagnosis of Ductless Gland Disease. (Lantern slides.)
4. The Differential Diagnosis of Dwarfism. (Lantern slides.)
5. The Differential Diagnosis and Treatment of Goiter. (Lantern slides.)
6. Organotherapy and Physiotherapy in the Treatment of Obesity and Asthenia.
7. Endocrine Factors and Organotherapy in Disturbances of Menstruation. (Lantern slides.)

G. Carl H. McPheeters, M. D., 1021 Mattei Building, Fresno.
1. Obstetrics vs. Midwifery.
2. Prenatal Care in Obstetrics. (Lantern slides.)
3. Care of the Abdomen and Breasts in Pregnancy. (Lantern slides.)
4. The Toxemias of Pregnancy and Their Treatments.
5. Obstetrics the Stronghold of Medicine Today.
6. Prenuptial and Prenatal Physical Examinations of Girls and Women.

George Warren Pierce, M. D., 1211 Flood Building, 870 Market Street, San Francisco.
1. Plastic Surgery in Civil Practice. (Lantern slides.)
2. Care of the Injured Hand. (Lantern slides.)
3. The Use of the Tubed Pedicle Flap in Plastic Surgery. (Lantern slides.)
4. Plastic Reconstruction of the Hand. (Lantern slides.)
5. Plastic Surgery of the Nose. (Lantern slides.)
6. Reconstruction of the Eye-Socket. (Lantern slides.)
7. The Treatment of Burns. (Lantern slides.)

Philip H. Pierson, M. D., 811 Medico-Dental Building, 490 Post Street, San Francisco.
1. Pleural Effusion, With or Without Pus—What Does It Mean From a Tuberculosis Viewpoint?
2. Hemoptysis—Its Importance and Treatment.
3. Pneumothorax—Its Indications and Contra-Indications.
4. What Forms of Therapy for Tuberculosis Have Stood the Test, and What are Their Indications.

V. H. Podstata, M. D., The Livermore Sanitarium, Livermore.
1. The Old Neurasthenic.
2. The Incipient Mental Depression. (Doctor Podstata not available on Tuesdays.)

J. Marion Read, M. D., 1183 Flood Building, 870 Market Street, San Francisco.
1. Classification and Treatment of Thyroid Disease. (Lantern slides.)
2. The Relation of Iodin to Thyroid Disease. (Lantern slides.)
3. The Prognosis and Treatment of Graves' Disease. (Lantern slides.)

Alfred C. Reed, M. D., 715 Fitzhugh Building, 380 Post Street, San Francisco.
1. Intestinal Protozoa in Clinical Practice.
2. Similarities of Sprue and Pernicious Anemia.
3. Treatment of Dysentery.
4. Management of Asthma.
5. Avoiding Old Age and the Preservation of Youth.

Robert Lewis Richards, M. D., 409 Fitzhugh Building, 380 Post Street, San Francisco.
1. Bad Parents and Fearful Children From a Medical Point of View.
2. Medical Beginning of Crime and Treatment of Same.
3. Emotional Thyroids.

Emmet Rixford, M. D., 1795 California Street, San Francisco.
1. Mechanics of Production of Fractures. (Lantern slides.)
2. General Principles of Treatment of Fractures.
3. Ulcer of the Stomach and Duodenum.
4. Cancer of the Stomach.
5. Cancer of the Colon and Rectum.

Max Rothschild, M. D., 704 Fitzhugh Building, 380 Post Street, San Francisco.
1. The Early Diagnosis of Pulmonary Tuberculosis.
2. The Diagnosis and Treatment of Tuberculosis of Bronchial Glands in Children. (Lantern slides.)
3. The Problem of Immunity in Tuberculosis.
4. The Treatment of Tuberculosis With Specific Remedies. (Lantern slides.)
5. The Treatment of Tuberculosis With Non-specific remedies, With Special Reference to Pneumothorax Treatment. (Lantern slides.)
6. Tuberculosis and Pregnancy.

7. Tuberculosis and Syphilis. (Lantern slides.)
8. Fever in Tuberculosis—Its Significance in Regard to Diagnosis, Treatment, and Prognosis.
9. Heliotherapy and Tuberculosis. (Lantern slides.)
10. Lung Abscess—Etiology, Diagnosis, and Treatment. (Lantern slides.)

C. O. Sappington, M. D., 602 Hutchinson Building, Oakland.
1. Standards of Education and Practice in Industrial Medicine.
2. Periodic Health Examinations—the Technique, Results, and Need. (Lantern slides.)
3. Industrial Lead Poisoning—Etiology, Diagnosis, and Prevention.
4. Industrial Absenteeism—An Application of Statistics to Medical Practice. (Lantern slides.)
5. Recent Advances in the Science of Industrial Ventilation and Illumination. (Lantern slides.)
6. The Economic Loss Due to Sickness in Industry. (Lantern slides.)

John Hunt Shepard, M. D., Growers Bank Building, San Jose.
1. Squamous Cell Epithelioma of the Lip—Especial Reconsideration of Grading the Degree of Malignancy. (Lantern slides.)
2. Our Present Knowledge of Thyroid Perversion.

Harry Spiro, M. D., Flood Building, 870 Market Street, San Francisco.
1. Angina Pectoris.
2. Some Related Cardiac Irregularities.
3. Quinidine Therapy.
4. Experiences With the Intravenous Use of Mercurochrome.
5. Aortitis. (Lantern slides.)
6. Blood Pressure and Its Treatment.
7. Judging the Quality of the Heart Muscle by Fluoroscopy.

William E. Stevens, M. D., Flood Building, 870 Market Street, San Francisco.
1. Urology in Women.
2. Urology During Infancy and Childhood.

Laurence R. Taussig, M. D., 803 Fitzhugh Building, 380 Post Street, San Francisco.
1. Malignancies of the Skin, Their Diagnosis and Treatment. (Lantern slides.)

E. B. Towne, M. D., Stanford University Hospital, San Francisco.
1. Recent Advances in the Localization and Treatment of Tumors of the Brain. (Lantern slides.)
2. Diseases of the Pituitary Gland — Diagnosis and Treatment. (Lantern slides.)
3. Localization and Treatment of Tumors of the Spinal cord. (Lantern slides.)
4. Prevention of Musculo-Spiral Nerve Injuries. (Lantern slides.)
5. Value of Roentgen-Ray in Treatment of Tumors of Brain and Pituitary Gland. (Lantern slides.)

William Voorsanger, M. D., 1001 Medico-Dental Building, 490 Post Street, San Francisco.
1. Pulmonary Conditions Wrongly Diagnosed as Tuberculosis. (Lantern slides.)
2. Tuberculosis Laryngitis—Is It Curable? Heliotherapy as a Remedy.
3. Gastro-Intestinal Complications in Pulmonary Tuberculosis.
4. Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.
5. What Do Tuberculin and Vaccines Really Accomplish in the Treatment of Pulmonary Tuberculosis?
6. Advances in the Diagnosis of Pulmonary Tuberculosis.
7. Suggestions on the Importance of the Sanitarium in the Treatment of Pulmonary Tuberculosis.
8. Pulmonary Abscess; Classification; Prognosis and Treatment. (Lantern slides.)

James T. Watkins, M. D., 212 Medical Building, 909 Hyde Street, San Francisco.
1. Technical Improvements in the Treatment of Fractures.
2. Surgical Approaches of the Knee, Hip, and Shoulder Joints.
3. Congenital Hip and Club-Foot.
4. Treatments of Infantile Paralysis.

Miley M. Wesson, M. D., Flood Building, 870 Market Street, San Francisco.
1. Urethritis and Sequelae. (Lantern slides.)
2. Diseases of the Prostate; Their Treatment—Medical and Surgical. (Lantern slides.)
3. The Prostatic Median Bar; Complications and Treatment. (Lantern slides.)
4. Diseases of the Bladder; Symptoms and Treatment. (Lantern slides.)
5. Diseases of the Kidney and Ureter; Symptoms and Treatment. (Lantern slides.)
6. Cysts of the Prostate and Urethra. (Lantern slides.)

John Homer Woolsey, M. D., 907 Medico-Dental Building, 490 Post Street, San Francisco.
1. Gastric and Duodenal Pathology. (Lantern slides.)
2. Empyema.
3. Carcinoma of the Rectum. (Lantern slides.)

Harold W. Wright, M. D., 413 Flood Building, 870 Market Street, San Francisco.
1. The Prognosis in the Psychoses, With Remarks on the Relation of General Hospitals to Psychiatric Service.
2. The Psychoses of the Puerperal State.
3. The Differential Diagnosis of Sciatic Pain.

Utah State Medical Association

T. C. GIBSON, M. D., Salt Lake City.....President
W. R. CALDERWOOD, M. D.....President-Elect
FRANK B. STEELE, M. D., Salt Lake.....Secretary

The complete transactions of the Annual Session, held September 7 to 12, at Salt Lake, will be published in November, as the very splendid transcript of the proceedings was not received in time for this issue.

A NEW YEAR

So far as the Utah State Association is concerned, we begin now a new year. President Gibson has not as yet appointed an editor for CALIFORNIA AND WESTERN MEDICINE to take the incumbent's place. But we still, as editor, want at this time to bespeak for him, whoever he may be, a hearty co-operation from the several county societies.

The Utah section of CALIFORNIA AND WESTERN MEDICINE is meant to be representative of the state. The only way in which any editor can gather the local news of interest is through the co-operation of the several secretaries, each of them sending him a monthly report. And if they will do this, if they will take this little trouble, if they will give him the chance to give their section representation—then we can build up the Utah section to a point where Doctor Musgrave, editor of CALIFORNIA AND WESTERN MEDICINE, will have to give us more space—to where he will be glad to do it. He has already said he would be glad. So, now, all together for the new year. Let's make him show that he meant it—every word. Send in your news notes after every meeting. You're each and every one entitled to a part of Utah's space. Will you use it or won't you? Come on. Let's go for the next twelve months.

HE WHO RUNS

As this is written, the meeting of the State Association is drawing to a successful close, with a good attendance, over 190 men having been enrolled among the visitors from two neighboring states. An election has been held, and Doctor T. C. Gibson has been installed president for the year to come, Doctor Calderwood has been named as president-elect, and Doctor Frank Steele has taken up the secretarial duties laid down by Doctor William Rich. Under the guidance, and assisted by the service of such men, the association can hardly do more than look upon the future with confidence.

As for the convention itself, consisting as it did of the routine conventional activities combined with and followed by the post-graduate program so ably furnished by the committee in charge, one can say little save that it was a gratifying success both for those who gained much or little from it. For a man may profit from such a course of instruction in two ways: Should he be deficient in knowledge on the subjects covered, then he may learn and strengthen himself. Should he already be possessed of the knowledge advanced for his apprehension, then is he strengthened and supported in his application of it by the knowledge that the men from far places—those who have had a wider experience than him-

self—have, as it were, placed the cachet of approval upon his methods and technic. There is only one trouble with such gettings together as the last convention, and that is: they come not often enough. He who runs may read.

There is something compellingly beautiful in that old-time oath with its pledge of clean, unselfish, sincere, unfaltering service. And there is something beautiful in the work, the face, the very soul of the man who lives up to it. There is something almost divinely beautiful in the life of the man—the doctor, the physician, the healer, the comforter, as he walks his daily path. He is a disciple of Hippocrates, who gathers to himself the intangible yet priceless values of the look in the eyes of a woman who has gone down into the valley of the Great Adventure of giving life and found him there a strong arm to lean upon rather than a broken reed; who earns for himself the clasp of baby arms, the touch of baby lips, in payment for the help he has rendered in a time of pain and danger, or reaps the harvest of the tears of thankfulness in parents' eyes. Disciple of Hippocrates—he serves his race, himself, and his God.

But what of the hypocrites? What of the man who, forgetting the oath he swore to follow, prostitutes his pledge and himself and his craft? You and I meet him and his work from day to day, and sometimes we rave, and sometimes we curse, and sometimes we simply weep. He it is that brings the blush of shame to the true doctor. We mean the man who deliberately advises an operation in order to gain a few dollars on the basis that, "if the patient survives it is all right." We mean the man who deliberately, under the guise of a "D. C."—that phraseology which, like the mantle of charity, covers a vast number of sins—deliberately for a price destroys incipient life, and "gets away with it." We mean the man who, in order to aggrandize his assumed reputation or his pocketbook or both, plants the barb of unkind criticism in the mind of a patient of some other member of his profession in order to gather that patient to himself. Surely, surely, the true disciple of Hippocrates will criticize only when criticism is deserved. Wherefore, we mean, of course, those men in an age when ignorance can no longer be held an excuse, who so conduct their service to their patients that such criticism can honestly be brought against them by sincere and informed members of their craft.

What we mean—if you get what we mean, and we hope to God you do—is simply this: Let's be disciples of Hippocrates; let's be true to that grand, uplifting, exalting oath, and let's NOT be hypocrites.

I'm a doctor. I hope I'm a good one. I try to be, at least. Anyway, I'm proud of my profession and its accomplishments. And I hope and I pray in my innermost soul that the day may come when the true physicians, of which there are such a glorious number, will stand shoulder to shoulder for the good of the race and the profession, and he who will not subscribe to the higher ideals of our calling shall more and more, like Lucifer, the Archangel who rebelled against the Most High—the hypocrite, wearing his cloak as a disguise rather than a glory—be driven out, uncloaked, unveiled, shown in his true colors, for the racial parasite he really is.

HIPPOCRATES OR HYPOCRITES

We don't know. We never met him. But if the code which bears his name is any criterion to go by we feel that Hippocrates must have been a pretty good old guy, with a large measure of optimism and more than the average of altruism in his makeup—both of which qualities could be more assiduously cultivated by the medical profession of today.

Anyway, the Hippocratic oath is a thing to remember as something more than a mere step in the program of being endowed with the degree of M. D. And as we sit up in a tree and watch the show go by we sometimes wonder just how many of the men who have taken that oath before that degree was conferred *do remember* it—at least in the sense they should.

Into the Hippocratic oath was written a code which, if followed, would make of the doctor a man and a minister to his fellows in nowise short of a priest. One who follows it as it was meant to be followed must be, as a result of its mere following, a man set aside from his fellows, for purity of thought and action—a man of men—one to be looked up to, trusted, given every confidence.

And is not this the ideal of the profession aside from the daily battle of the disease just as much as it was in the days of the ancient Greek? The men who have gone down in history, whose names will live as benefactors of the race, are the men who *have served*. Service is the measure of the true man's worth—be that service rendered to a state, a nation, or a little child.

And so, it would be even more advantageous if one could have the opportunity to read a little more—a little oftener—those things which can refresh his recollection, build up his information, give him a renewed confidence.

Convention Notes—The ubiquitous detail man was on the job. A medical convention without a few detail men is like a circus without peanuts and pink lemonade.

We think more men should have attended the lectures on blood chemistry, serology, bacteriology and kindred subjects. Too many doctors seem to think that the difference betweet a gram negative and a gram positive organism is similar to a parliamentary vote. As a matter of fact, whether the negatives or the positives have it the patient has it in either event.

Doctors who come to a convention for the purpose of renewing personal acquaintances or airing their own viewpoints should be given a private lecture room for the purpose. Some of the men want to hear what the lecturer has to say while he talks.

We wish to disabuse the idea that the chairman of the banquet committee was under the table. In reality he was professionally engaged with a patient who could not retain her food (not at the banquet).

The thanks of the Association should go to the University of Utah for the use of their buildings during the convention and the co-operation of the medical faculty during the convention week.

Cecil Alter, in charge of the Weather Bureau, should also draw a vote of thanks. The brand of weather which he distilled during the convention could have been equaled only in California, where, rain or shine, the sun shines 100 per cent. Well, after all, Utah is best described in the words of the French artist who visited one of her canyons and sought to describe it. Having used up all his superlatives, he ran out of words and finally summed it up as "Pretty darned good." It is.

A noticeable factor in the convention was that the lec-

turers talked horse sense. It's a good thing to mix with every prescription or each bit of professional advice.

Anyway the convention was a success.

Utah Notes (reported by J. U. Giesy, associate editor) — Meeting of Catholic Association — Welcomed by Governor George H. Dern and the Rt. Rev. Joseph S. Glass, C. M., D. D., bishop of the Catholic diocese of Salt Lake, the members of the Mountain States Conference of the Catholic Hospital Association convened for a two-day session Wednesday morning at the Holy Cross Hospital at 8 o'clock, where Holy Mass was said by Bishop Glass followed by his opening remarks, which welcomed the visitors to the city and to the hospital. Governor Dern added his greetings and welcome to the visitors, followed by a greeting from Dr. J. J. Galligan.

An attractive program of scientic discussion by visitors and local hospital workers, interspersed with social features, continued during the two days' session.

Nevada State Medical Association

A. J. HOOD, M. D., Elko.....President
HORACE J. BROWN, M. D., Reno.....
.....Secretary and Associate Editor for Nevada

PROCEEDINGS OF THE TWENTY-SECOND ANNUAL SESSION, ELKO, NEVADA, SEPTEMBER 4, 5, 6, 1925.

The twenty-second annual meeting of the Nevada State Medical Association was called to order by President W. M. Edwards at 10 a. m. in the courthouse at Elko, September 4, 1925.

The program was rendered as follows, with excellent presentation of timely subjects and splendid attention:

Professor Peter Frandsen, Reno, representing the American Association for Medical Progress — "Anti-Scientific Propaganda." He gave history and aims of the American Association for Medical Progress, and answered questions often asked. This association is safeguarding the public against anti-scientific methods. He recommended public health meetings for the public, and explaining to patients the principles of therapy and the prevention of disease. Discussion by Henry Albert, T. W. Huntington, E. L. Gilcreest, Peter Frandsen.

Henry Albert, M. D., Reno—"The Prevention and Control of Infantile Paralysis." As outbreaks have occurred this year, Nevada may expect an epidemic this fall or winter. Expression of anxiety and resistance, dull sclera with resistance to flexion of neck and a slight Kernig's sign are of definite diagnostic aid. Tapping of spinal canal relieves pressure, and is of therapeutic value. Isolate nurse and family with patient. After three weeks, with proper antiseptic precautions, family may leave premises. Circular used at Fallon. Discussion by H. W. Sawyer, W. L. Samuels, H. J. Reese, W. H. Hood.

Arthur Collis Gibson, M. D., San Francisco—"Chronic Parasinusitis," with slides. Discussion by Henry Albert, William Edwards, Anna De Chene.

Edgar L. Gilcreest, M. D., San Francisco—"The Treatment of Fractures of the Elbow Joint and the Lower End of the Humerus," with slides. Discussion by A. J. Hood, R. A. Bowdle, A. R. Kilgore, J. F. Kerby, T. W. Huntington.

J. F. Kerby, M. D., Salt Lake City, Utah—"Anomalies, Diseases and Injuries of the Spine," with slides. Discussion by H. J. Brown, R. A. Bowdle, E. L. Gilcreest, H. Zimmerman, C. E. Piersall, H. Albert, Albert Soiland.

Eric A. Larson, M. D., Woodland, California—"The Treatment of Peptic Ulcer." Discussion by A. R. Kilgore, E. L. Gilcreest, Albert Soiland, William Edwards.

The Reno Radium-X-ray Association presented a four-reel movie on "Pulmonary Tuberculosis" at the theater.

September 5, 1925, 9 a. m.—The business meeting was called to order by President Edwards.

It was moved by D. A. Turner that the reading of the minutes be omitted. Seconded by W. A. Shaw. Carried.

The secretary's report was read, and it was moved by Turner that the report be approved and that the secretary be allowed to buy a filing cabinet, which is now necessary. Carried.

The report of the delegate to the American Medical Association was read.

The report of the Judicial Committee was read by H. J. Brown. A telegram from Dr. Eby was read by the secretary, and a motion by H. J. Brown was made that we give Dr. Eby our sympathy in his illness, and regrets that he could not attend this meeting.

Dr. Turner asked that the doctors of Nevada enter the United States Medical Officers Reserve Corps.

Election of Officers—W. A. Shaw nominated W. L. Samuels for president. R. Bowdle nominated A. J. Hood of Elko for president. H. I. Brown moved that the nomination be closed and the votes be made by written ballot. Turner seconded the motion. Carried. A. J. Hood received seven votes and W. L. Samuels received two votes. It was moved by Olmsted and seconded by Roantree that the secretary cast a unanimous ballot for Dr. Samuels as vice-president. Carried. It was moved by Roantree that C. W. West be nominated for second vice-president, and that the secretary cast a unanimous ballot for him. Carried.

C. E. Piersall nominated V. A. Muller for secretary and treasurer. W. A. Shaw nominated H. J. Brown. Dr. Brown received nine votes, and Dr. Muller received four votes.

H. J. Brown nominated W. A. Shaw for re-election for a three-year trustee. Secor moved that the motion be closed, and the secretary cast a unanimous ballot for Dr. Shaw. Seconded by Dr. Bowdle. Carried.

H. J. Brown moved that all physicians who are our guests be honorary members. Seconded by Shaw. Carried.

H. J. Brown also moved that the Nevada State Medical Association pay all that it is able to pay of the expenses incurred by the Elko County Medical Society for the 1925 meeting, and that we express a vote of thanks to Elko County for their splendid entertainment. Seconded by Dr. Bowdle. Carried.

A motion was made by Dr. John E. Worden to have the 1926 meeting at Reno. A motion was made by R. A. Bowdle that the next meeting be held at Ely. The vote was a tie. A motion was made by W. L. Samuels, and seconded by Turner, that the 1926 meeting be held at Bowers Mansion. Carried.

The president appointed the following three committeemen to work with the University of Nevada Agricultural Extension Division: Henry Albert, H. J. Brown, and C. E. Secor.

Saturday, September 5, 1925—Miss Mary Stillwell of the Nevada Agricultural Extension Division of the University of Nevada gave a talk on "Health Contests Among 4'H Clubs," with demonstration by two club girls. Discussion and approval by T. H. Huntington, H. J. Brown.

It was moved by H. J. Reese that the president appoint a committee of three to confer with the University of Nevada to co-operate with yearly assemblages in health problems. Carried.

Albert Soiland, M. D., Los Angeles—"The Granulomata, Hodgkin's Disease, Lympho, Sarcoma, and Leukemia." Discussion by A. R. Kilgore, J. F. Kerby, H. Zimmerman, Eric E. Larson.

Miley B. Wesson, M. D., San Francisco—"Conservation vs. Radical Surgery for Traumatic Rupture of the Kidneys," with slides. Discussion by E. L. Gilcreest, Eric E. Larson, T. H. Huntington, R. P. Roantree, R. A. Bowdle.

Alfred B. Spalding, M. D., San Francisco—"The Surgical Utility of the Pelvic Fascia in Cases of Cystocele, Rectocele and Uterine Prolapse," with slides. Discussion by E. A. Larsen, Miley B. Wesson.

P. K. Brown, M. D., San Francisco—"The Medical and Surgical Treatment of Angina," with illustrations. Discussion by W. W. Washburn, E. L. Gilcreest.

H. J. Brown, M. D., Reno — "The Workings of the American Medical Association." Discussion by John E. Worden, Miley B. Wesson.

W. W. Washburn, M.D., San Francisco—"The Modern Surgical Treatment of Goiter," with slides. Discussion by

E. A. Larsen, E. L. Gilcreest, P. K. Brown, S. M. Sproat, W. L. Samuels, R. P. Roantree.

Banquet at Lamoille.

The following members were in attendance at various times during the meeting:

William M. Edwards, Henry Albert, Anna B. De Chene, R. A. Bowdle, D. A. Smith, W. L. Samuels, John E. Worden, W. A. Shaw, A. R. Kilgore, W. H. Hood, C. E. Secor, A. J. Hood (Elko), A. C. Olmsted, C. W. Eastman, C. E. Piersall, H. J. Brown, J. T. Reese, H. W. Sawyer, R. P. Roantree, D. A. Turner, H. A. Paradis.

The following visitors were also present at various times during the meeting:

T. W. Huntington, M. B. Wesson, J. P. Kerby, J. P. Warren, E. L. Creveling, Peter Frandsen, Edmund White, A. C. Gibson, Eugene Benjamin, E. Eric Larson, H. A. Collings, A. Soiland, Mary E. Stilwell, W. W. Washburn, E. L. Gilcreest, G. J. Hull, A. B. Spalding, R. H. Travers, H. Zimmerman, S. M. Sproat, P. K. Brown.

CORRESPONDENCE

C. O. Sappington, M. D., Oakland, Calif., commenting on the article by Doctor Shuman, "Questionable Diagnostic Methods," published in the August issue of CALIFORNIA AND WESTERN MEDICINE, page 1027, says:

All progressive clinicians will, no doubt, agree with Dr. Shuman that it is not to the best interest of any sick patient to be examined by too many physicians. Refined diagnoses, so called, are frequently made at the expense of comfort and safety.

The standardization of diagnostic procedures is a necessity, which might be handled through standardization committees as have other procedures.

One is inclined to agree with Dr. Fulton's idea that perhaps the greater of two evils in regard to laboratory methods is neglect, rather than abuse. Medicine is certainly more scientific today than ever before. As President Ewer has so well remarked, "Cold science, effective but not always convincing, has come into nursing and medicine as sentiment has been squeezed out." As a clinical guide-post for future use, perhaps Sir James MacKenzie's observation is noteworthy: "The next advances in clinical medicine must be the recognition of the diseased state before it has produced gross structural changes and the recognition of the conditions that predisposed or induced the disease." This surely calls for diagnostic thought.

Dr. Bine commented most interestingly on the "old fogy" physician—as he was called by some of his more modern younger associates—and the experiences during an epidemic in which the older man was more valuable than the younger ones. As a representative of the younger group of medical men, let me say that I heartily wish that there was more genuine respect between the younger and older men. Respect, of course, is a mutual feeling. Many younger men feel that, through newer methods, they know more; many older men feel that, through more experience, they are superior. Both err, for both new ideas, methods, and long experience are essential. In perhaps no other walk of life than the practice of medicine do years of experience play so vital a part. Yet young fellows often set themselves up as specialists when barely out of school, and one hears tales of incomes which overreach five figures within the first year of specialty practice, while most of our good practitioners today know that years of labor and thought are necessary to build up such an income.

Perhaps a bit more of regard for the experience of the older man, on the part of the young fellows, and a little more commendation and encouragement of the young practitioner by those in seniority would improve relations. And, again, perhaps all of us, old and young, should more keenly realize that "life is short, the art long, judgment difficult, delay dangerous, experience fallacious."

Manila, P. I., August 5, 1925.

My dear Dr. Musgrave—Your kind appreciation of the actual status and development of the Department of Legal Medicine in the Philippines, as outlined in your editorial in the August issue of California and Western Medicine, gives me the strongest encouragement to maintain my devotion to the subject, and to work harder for a greater extension of its application to the legal and social needs of this country.

In this connection permit me to inform you that, thanks to the inclusion of the subject of Legal Medicine among the required subjects in the courses of law and medicine, and the relatively more intensive and practical teaching of the same during the last decade, *we are actually noting here a remarkable change of orientation taking place in the procedure of the courts of justice in relation to medico-legal questions and problems.* The prosecuting attorneys, at least in the city of Manila, deal with these questions by making previous careful preparation with the aid of medical experts, thus compelling the side of the defense to adopt equal or better means and thereby affording the judges to have a better basis to understand and decide on scientific matters.—Sixto De Los Angeles, Professor and Head Department of Legal Medicine.

Medicine Before the Bench

Findings and Comments of the Courts on Acts and Omissions of Doctors

(EDITOR'S NOTE—*The law reports contain many interesting decisions, involving the reputations and fortunes of doctors. In this column in each issue a brief summary of one or more decisions and comments of the several courts of last resort upon the cases will appear. The matter will be selected by our general counsel, Hartley F. Peart, who, with Hubert T. Morrow, attorney for Southern California, will contribute from time to time.*)

A case was recently tried before a jury in the Superior Court of this state, involving the following situation:

A practicing dentist had made certain false teeth for a patient and had delivered them to her upon the claimed understanding that she would pay for them within a certain time. Before the teeth were paid for, the patient called on the dentist for additional examination and work, and, as claimed by plaintiff, while she was permitting her mouth to be examined, the dentist forcibly removed the teeth and stated to the patient that when she had paid for the teeth she could have them back, but that he would not return them unless and until he had been paid.

The patient sued for damages, claiming that title to the teeth had passed to her upon the credit of her contract to pay, and that the defendant dentist committed an assault upon her person in forcibly taking the teeth, and that his remedy was purely contractual for the price of the teeth. A jury was demanded by plaintiff and there was evidence that plaintiff suffered from shock as the result of the withdrawal of her teeth, a physician testifying that he gave plaintiff an opiate to quiet her nerves. After argument, the jury awarded plaintiff $500 damages, an amount very much in excess of the value of the teeth.

On motion for a new trial, the trial judge permitted the verdict in favor of plaintiff to stand, but reduced the amount to $250, on the ground that the damages awarded were excessive.

"Anybody hurt in the wreck?"

"One gentleman, I believe."

"Bones broken?"

"I think it was his heart. He sat down by a leaking suitcase and shed tears."

"There goes a man who thinks in terms of millions."

"He doesn't look to me like a great financier."

"He isn't; he's a germ expert."